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REPORT OF JUNE 2014 VAPOR INTRUSION ASSESSMENT

CTS OF ASHEVILLE, INC. SUPERFUND SITE

**235 Mills Gap Road
Asheville, Buncombe County, North Carolina
EPA ID: NCD003149556
CERCLA Docket No. CERCLA-04-2012-3762**

Prepared for:

**CTS Corporation
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Prepared by:

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AMEC Project 6252-12-0006

August 14, 2014



August 14, 2014

Ms. Samantha Urquhart-Foster
Superfund Remedial and Site Evaluation Branch
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Subject: Report of June 2014 Vapor Intrusion Assessment
CTS of Asheville, Inc. Superfund Site
235 Mills Gap Road, Asheville, Buncombe County, North Carolina
EPA ID: NCD003149556
CERCLA Docket No. CERCLA-04-2012-3762
AMEC Project 6252-12-0006

Dear Ms. Urquhart-Foster:

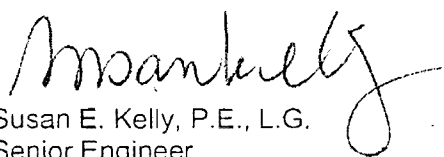
Please find attached the Report of June 2014 Vapor Intrusion Assessment (VI Report) for the above-referenced Site. AMEC Environment & Infrastructure, Inc. prepared this VI Report on behalf of CTS Corporation pursuant to the requirement set forth in Section 1.3.4 of the Scope of Work contained in Appendix A of the Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study between the United States Environmental Protection Agency (USEPA) Region 4 and CTS Corporation (effective date of January 26, 2012) and as directed by USEPA in an email dated June 5, 2014.

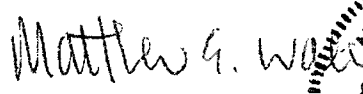
As requested by USEPA, preliminary (i.e., not validated) analytical laboratory data were provided to USEPA on July 2, 2014, and the USEPA was notified on July 10, 2014, that the data validation did not identify quality issues regarding the analytical results.

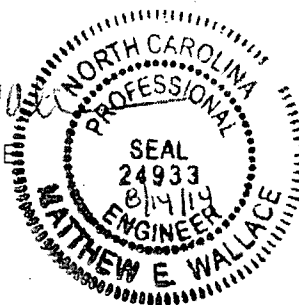
If you have questions regarding this VI Report, please contact us at (828) 252-8130.

Sincerely,

AMEC Environment & Infrastructure, Inc.


Susan E. Kelly, P.E., L.G.
Senior Engineer


Matthew E. Wallace, P.E.
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SEK/MEW:sek

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LIST OF ACRONYMS

AMEC	AMEC Environment & Infrastructure, Inc.
cis-1,2-DCE	cis-1,2-dichloroethene
COPC	constituent of potential concern
HI	Hazard Index
IRIS	Integrated Risk Information System
MDL	method detection limit
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
MGRA	Mills Gap Road Associates
NHL	non-Hodgkin lymphoma
PID	photoionization detector
RfC	reference concentration
RSL	Regional Screening Level
SIM	selective ion monitoring
trans-1,2-DCE	trans-1,2-dichloroethene
TCE	trichloroethene (also, trichloroethylene)
USEPA	United States Environmental Protection Agency
VI	vapor intrusion
VISL	Vapor Intrusion Screening Level
VOC	volatile organic compound



EXECUTIVE SUMMARY

AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of CTS Corporation, conducted this vapor intrusion (VI) assessment for the CTS of Asheville, Inc. Superfund Site (Site). This VI assessment was conducted pursuant to Section 1.3.4 of the Scope of Work contained in Appendix A of the Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (Settlement Agreement) between the United States Environmental Protection Agency (USEPA) and CTS Corporation (Respondent) and as directed by USEPA in a June 5, 2014, email to AMEC. This Report of June 2014 Vapor Intrusion Assessment describes the activities that were undertaken to evaluate potential vapor intrusion at residences located east of the Site.

This VI assessment was conducted in accordance with the USEPA-approved Supplement to Vapor Intrusion Assessment Work Plan (Revision 4) dated June 11, 2014 (Supplemental VI Work Plan). The objective of this VI assessment was to determine whether concentrations of Site-related volatile organic compounds (VOCs) are present in indoor air and crawlspaces at residences east of the Site. The detected analytes were compared to risk-based screening values to determine the potential for the occurrence of vapor intrusion to pose a potential risk to the residential receptors.

Previous investigations have identified VOCs at the Site, primarily trichloroethene (TCE). The TCE groundwater plume generally extends from the area of the former facility to areas east and west of the Site, coincident with the direction of shallow groundwater flow. Groundwater discharge zones are located east and west of the Site at seeps and springs. Unnamed tributaries form at these seep/spring areas and flow topographically away from those areas.

The Supplemental VI Work Plan described the collection of indoor and crawlspace air samples at six residences located east of the Site. Ambient air samples were collected between the seep/spring area and the indoor/crawlspace sample locations, as well as between the seep/spring area and additional surrounding residences. The air samples were submitted for Site-specific VOCs according to USEPA Method TO-15 SIM (selective ion monitoring).

The data collected for the assessment are considered 100 percent complete and usable for meeting the objectives presented in the VI Work Plan and the Supplemental VI Work Plan.

Concentrations of TCE and cis-1,2-dichloroethene were detected in the collected air samples. Estimated concentrations (i.e., above the method detection limit, but below the laboratory reporting limit) of trans-1,2-dichloroethene and vinyl chloride were detected in several air samples. Concentrations of detected constituents during this VI assessment are generally similar to (i.e., within the same order of magnitude) those constituent concentrations detected during previous sampling events conducted by USEPA and its contractors.

Concentrations of the four detected volatile compounds were compared to USEPA risk-based screening levels for residential indoor air. Only TCE had detections that exceeded the screening concentrations and was thus selected as the focus of the risk evaluation. Risk calculations were completed using the detected indoor air concentrations of TCE by



comparing these concentrations to inhalation toxicity benchmarks. The estimated incremental risk from indoor air for child residents ranges from 1×10^{-7} to 4×10^{-7} . The estimated incremental risk from indoor air for adult/child residents ranges from 5×10^{-7} to 1×10^{-6} . The estimated hazard indices (HIs) for TCE in indoor air range from 0.1 to 0.2 for both residential adults and children.

The estimated HIs and incremental risks do not indicate unacceptable risk or hazards for residential receptors potentially exposed via indoor air vapor. The detected concentrations in crawlspace and ambient air do not exceed the screening values for risk evaluation. In addition, the measured air concentrations are within the national background indoor air concentrations.

Based on the results of this assessment, as well as previous assessments performed by USEPA and its contractors, the need for additional indoor air sampling in the residences is not warranted at this time.



1.0 INTRODUCTION

AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of CTS Corporation, has prepared this Report of June 2014 Vapor Intrusion Assessment (VI Report) for the CTS of Asheville, Inc. Superfund Site (Site). This VI Report describes work conducted in accordance with the Supplement to Vapor Intrusion Assessment Work Plan, Revision 4 (Supplemental VI Work Plan), dated June 11, 2014 (AMEC, 2014), which was conditionally approved by the United States Environmental Protection Agency (USEPA) in a letter dated June 12, 2014. The Vapor Intrusion Assessment was conducted pursuant to Section 1.3.4 of the Scope of Work contained in Appendix A of the Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (Settlement Agreement) between the USEPA and CTS Corporation (effective date January 26, 2012) and as directed by USEPA in an email dated June 5, 2014. This VI Report describes the activities that were undertaken to evaluate potential vapor intrusion at residences located east of the Site.

1.1 SITE DESCRIPTION

The Site is approximately nine acres on Mills Gap Road in Asheville, Buncombe County, North Carolina and the areal extent of the contamination. The approximate center of the Site is located at north latitude 35°29'36" and west longitude 82°30'25" (Figure 1). The Site formerly contained an approximate 95,000-square foot, single-story brick and metal structure in the southern portion of the Site (Figure 2). The building was demolished in December 2011 and the concrete building pad remains intact. The northeastern portion of the Site contains an asphalt-paved parking area and asphalt-paved driveways are located parallel to the north (front) of the former building and southeast (rear) of the former building. A six-foot high chain-link fence surrounds the Site and a locked gate at the north end of the Site controls access to the Site from Mills Gap Road. The Site is unoccupied.

1.2 SITE OPERATIONAL HISTORY

International Resistance Company owned and operated a manufacturing facility at the Site from 1952 until 1959, when CTS of Asheville, Inc. purchased the real property, building, and equipment. CTS of Asheville, Inc. manufactured electronic components at the facility from 1959 until April 1986. Arden Electroplating, Inc. leased a portion of the

building from approximately December 1, 1985, until November 30, 1986, and the Site was conveyed to Mills Gap Road Associates (MGRA) on December 23, 1987. MGRA reportedly leased portions of the facility to various tenants, and otherwise utilized the building for business interests. The Site has been vacant/unoccupied since the mid-1990s.

Electronic components utilized in automotive parts and hearing aids were manufactured by CTS of Asheville, Inc. until plant operations ceased in April 1986. Small electronic components were electroplated with tin, nickel, zinc, and silver as one step in the process. Wastes generated from the process included sludge containing heavy metals and solvents. Solvents, including trichloroethene (TCE) and acetone, were used in the process to clean and/or degrease metal objects prior to electroplating.

Disposal/recycling activities at the facility prior to 1959 are unknown. From 1959 to 1986, solvents and metals were reportedly reclaimed whenever possible. Between 1959 and 1980, metal-bearing rinse waters and alkaline cleaners that could not be reclaimed from the electroplating process were reportedly disposed of through the municipal sewer system, while concentrated metals and solvent wastes were placed in drums for off-site disposal/recycling. After 1980, wastes were accumulated in drums on-site prior to off-site disposal or recycling.

1.3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Environmental investigations have been conducted at the Site by several entities since 1987. The results of previous investigations have been described in other Site documents, and will be presented in the Remedial Investigation/Feasibility Study Work Plan to be prepared for the Site. The results of previous investigations have identified volatile organic compounds (VOCs), primarily TCE, at the Site.

Although the shallow/overburden TCE groundwater plume has not been completely delineated, the plume is expected to terminate near or slightly beyond the seep/spring areas east and west of the Site. Volatilization of TCE and degradation products from the groundwater plume represents a potential pathway for vapor intrusion into residential structures located in the vicinity of the groundwater plume. The surface waters that



emanate from the springs east and west of the Site contain TCE; therefore the volatilization of TCE from the surface waters is a potential pathway affecting ambient air in the vicinity of the surface waters.

Soil contamination associated with the Site has not been identified on adjacent properties; therefore, volatilization of constituents from soil contamination is not expected to contribute to vapor intrusion into residences located adjacent to the Site property. As summarized in Section 1.3.1 below, air sampling has been conducted in the vicinity of the Site and has included sampling of soil gas, crawlspace air, indoor air and ambient/outside air.

1.3.1 December 2007 and August 2008 Air Sampling

The USEPA and their contractors conducted air sampling in the vicinity of the Site in December 2007. The sampling included 10 subslab and 12 crawlspace air samples collected from 22 residences, as well as ambient air and 'slam bar' soil gas samples (T N & Associates, 2008).

A Trace Atmospheric Gas Analyzer (TAGA) was also used to screen air quality in the vicinity of the Site. TCE was detected in crawlspace air samples collected at residences located on properties adjacent to the Site at concentrations ranging from an estimated concentration of 0.243 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) at [redacted] (west of Site) to 20.3 $\mu\text{g}/\text{m}^3$ at [redacted] (east of Site). Concentrations of detected constituents in the subslab and crawlspace air samples were not above USEPA's stated removal action levels.

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In August 2008, USEPA and their contractors collected five crawlspace air samples, two indoor air samples, and one soil gas sample (as well as ambient and duplicate air samples) from six residences in the area of the Site (T N & Associates, 2009). TCE was detected in crawlspace air samples collected at residences located on properties adjacent to the Site at concentrations ranging from an estimated concentration of 1.15 $\mu\text{g}/\text{m}^3$ at [redacted] (west of Site) to 7.41 $\mu\text{g}/\text{m}^3$ at [redacted] (east of Site). Concentrations of detected constituents in the air samples were not above USEPA's stated removal action levels.

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Ambient air samples were collected during the aforementioned sampling events. Concentrations of TCE detected in the ambient air samples were highest near the seep/spring areas. The concentration of TCE in the vicinity of the springs east of the Site during the August 2008 air sampling event was $1,490 \mu\text{g}/\text{m}^3$ and the concentration of TCE in the vicinity of the spring(s) west of the Site during the August 2008 air sampling event was $5.24 \mu\text{g}/\text{m}^3$ (T N & Associates, 2009). The concentrations of TCE detected in other ambient air samples decreased with distance from the seep/spring areas.

1.3.2 October 2012 Air Sampling

Section 1.3.4 of the Settlement Agreement Scope of Work requires an evaluation of vapor intrusion at residences immediately contiguous to the Site and/or proximate to the currently known groundwater plume. Air samples were collected at properties west of the Site in October 2012. Access to properties east of the Site had not been obtained by the USEPA at the time of the October 2012 sampling event.

Concentrations of TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and/or vinyl chloride were detected in the collected air samples. Concentrations of detected constituents were generally similar to or slightly less than constituent concentrations detected during previous sampling events conducted by USEPA and its contractors. A screening-level risk assessment was conducted using the detected TCE concentrations. The calculated Hazard Indices and incremental risks did not indicate unacceptable risks or hazards for potential residential receptors.

1.3.3 April 2014 Air Sampling

Air samples were collected at properties east of the Site in April 2014. Concentrations of TCE and cis-1,2-DCE were detected in the collected air samples. Concentrations of trans-1,2-dichloroethene and vinyl chloride were estimated (i.e., above the method detection limit, but below the laboratory reporting limit) in several air samples. Concentrations of detected constituents during the April 2014 VI assessment are generally similar to (i.e., within the same order of magnitude) those constituent concentrations detected during previous sampling events conducted by USEPA and its contractors.

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Concentrations of TCE detected in the crawlspace and indoor air at [redacted] were similar to the associated ambient air samples. The indoor and crawlspace concentrations of TCE detected at [redacted] were elevated with respect to TCE detected in the associated adjacent ambient air samples. The cis-1,2-DCE to TCE ratio for the air samples collected at [redacted] Road indicated a different biodegradation pattern than other air samples collected during the investigation, indicating a separate distinct source of TCE inside the [redacted] residence. The source of the TCE concentrations in crawlspace and indoor air at [redacted] is not known; however, the source is not considered to be ambient air in the vicinity of the residence and is not a result of vapor intrusion from the ground.

A screening-level risk assessment was conducted using the detected TCE concentrations. The calculated Hazard Indices and incremental risks indicated unacceptable risks or hazards for potential residential receptors.

1.4 OBJECTIVE OF THE VAPOR INTRUSION ASSESSMENT

The objective of this supplemental June 2014 air sampling, as proposed in the Supplemental VI Work Plan and as directed by USEPA, is in accordance with Section 1.3.4 of the Settlement Agreement which requires evaluation of vapor intrusion at residences in the vicinity of the Site and/or proximate to the currently known groundwater plume. The full extent of the groundwater plume at the Site has not been delineated; therefore, the air sampling locations were at those residences nearest the groundwater plume as it is known at this time. As additional data are collected during implementation of the Remedial Investigation, and as the conceptual site model becomes more developed, the potential vapor intrusion pathway may become more fully understood and additional assessment may be necessary.

The objective of this phase of vapor intrusion assessment was to collect air samples at additional nearby residences, some of which were previously assessed by USEPA, emanating outward from the springs area east of the Site where air sampling was performed in April of 2014. This sampling determined if concentrations of Site-related VOCs were present in indoor air and crawlspaces at the residences. The detected concentrations, if any, were compared to risk-based screening values to indicate the



potential for the occurrence of vapor intrusion to pose a potential risk to the residential receptors.



2.0 VAPOR INTRUSION ASSESSMENT ACTIVITIES

The VI assessment was conducted in accordance with the USEPA-approved Supplemental VI Work Plan. The collected air samples were analyzed for TCE, which is the primary volatile constituent known to be present in groundwater associated with the Site, as well as compounds that are degradation products of TCE.

2.1 SAMPLING ACTIVITIES

Reconnaissance and sampling activities were conducted from June 23 to June 25, 2014. The USEPA Remedial Project Manager and a USEPA contractor representative accompanied AMEC during the reconnaissance and sampling activities.

2.1.1 Access to Sample Off-Site Properties

The USEPA provided access agreements to property owners where air samples were proposed to be collected prior to initiating the air sampling activities. The access agreements requested access for AMEC and USEPA personnel to enter the subject property for collection of air samples. Access agreements were obtained from the owners of the following properties:

- [redacted] Buncombe County PIN [redacted]
- [redacted] (Buncombe County PIN [redacted])
- [redacted] (Buncombe County PIN [redacted])
- [redacted] (Buncombe County PIN [redacted])
- [redacted] Buncombe County PIN [redacted]
- [redacted] (Buncombe County PIN [redacted])
- [redacted] (Buncombe County PIN [redacted])

The signed access agreements are included in Appendix A.

USEPA attempted to obtain an access agreement for the property at [redacted] (Buncombe County PIN [redacted]) however, a signed access agreement was not received by USEPA to allow sampling on the property.

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2.1.2 Crawlspace and Indoor Sample Locations

Indoor and/or crawlspace air samples were collected from the following six residences, which are located east of the Site (Figure 3):

- [] Road (sample ID: [])
- [] Road (sample ID: [])
- [] Court (sample IDs: [] and [])
- [] Court (sample IDs: [] and [])
- [] (sample ID: [])
- [] (sample IDs: [] and [])

The residence at [REDACTED] is a one-story home with a basement. A portion of the basement is reportedly finished living space. The indoor air sample (IAS-10) was collected in the living room of the residence.

The residence at [REDACTED] is a 1.5-story home with a partially finished walk-out basement. The indoor air sample (IAS-08) was collected in the living room of the residence, and a field duplicate sample (FD-06) was collected in conjunction with IAS-08. This residence was added to the planned sampling locations that were included in the Supplemental VI Work Plan at the request of the homeowner and with USEPA's approval.

The residence at [] Court is a one-story mobile home with a crawlspace. The ground surface of the crawlspace is soil and gravel. There were no items being stored in the crawlspace during the sampling activities. The indoor air sample (IAS-07) was collected in the living room of the residence and the crawlspace air sample (CAS-07) was collected in the northern portion of the crawlspace.

The residence at [] Court is a one-story home with a crawlspace. The ground surface of the crawlspace is soil and is partially covered with a polyethylene moisture barrier. All-terrain vehicles, lawn mowing equipment, paint cans, and other miscellaneous items were being stored in the crawlspace during the sampling activities. The indoor air sample (IAS-13) was collected in the living room of the residence and the crawlspace air sample (CAS-13) was collected in the southeastern portion of the crawlspace.

The residence at [] Road is a one-story home with a crawlspace. Sewage was leaking in the crawlspace at the time of the reconnaissance and sampling; therefore, a crawlspace air sample could not be collected at the residence. The indoor air sample (IAS-12) was collected in the dining area of the residence, between the kitchen and the living room.

The residence at [] Road is a one-story home with a crawlspace. The ground surface of the crawlspace is soil and is covered with a polyethylene moisture barrier. There were no items being stored in the crawlspace during the sampling activities. The indoor air sample (IAS-11) was collected in the living room of the residence and the crawlspace air sample (CAS-11) was collected in the southeastern portion of the crawlspace. A field duplicate sample (FD-07) was collected in conjunction with CAS-11.

Photographs of the sample locations are provided in Appendix C.

2.1.3 Ambient Air Sample Locations

Seven ambient air samples (AAS-07 through AAS-14) were collected at locations between the sampled residences and the spring/seep area located east of the CTS property. A field duplicate sample (FD-08) was collected in series with AAS-13.

Photographs of the sample locations are provided in Appendix C.

2.1.4 Sample Collection

Air samples were collected using individually-certified, 6-Liter, electropolished, stainless steel (SUMMA®) canisters. The canisters were equipped with individually-certified flow controllers that were set to collect an air sample over a 24-hour period.

The indoor air sample canisters were placed on a plastic bucket on the floor surface for sample collection. The sample inlet height was approximately three feet above the floor surface.

The crawlspace air sample canisters were placed on the ground surface. The sample inlet height was approximately two feet above the ground surface.

The ambient air samples were secured to a fence post driven into the ground at the sample locations. The sample inlet height was between four and five feet above ground surface.

Individually-certified vacuum gauges were attached to each canister and sample personnel recorded vacuum gauge readings at the beginning and end of sample collection. The air temperature also was recorded at the beginning and end of sample collection (for indoor and crawlspace air samples, the indoor/crawlspace temperature and ambient/outdoor temperature were both recorded). A calibrated photoionization detector (PID) was used to measure organic vapors in the vicinity of the sample canister during sample deployment and retrieval. Each canister was deployed for 24 hours, and a sample tag was affixed to the canisters prior to shipment to the laboratory.

Copies of the field data records and logbook for the sampling activities are included in Appendix D. Table 1 contains a summary of the air samples collected and quality assurance/quality control samples submitted to the laboratory. Copies of the laboratory certifications for the canisters, flow controllers, and vacuum gauges are included in Appendix E.



The air samples were shipped under chain-of-custody protocol via overnight delivery to ALS Environmental in Simi Valley, California.

2.2 ANALYSIS OF AIR SAMPLES

The air samples were submitted for analysis of the following Site-related VOCs according to USEPA Method TO-15 SIM (selective ion monitoring):

- trichloroethene
- cis-1,2-dichloroethene
- trans-1,2-dichloroethene (trans-1,2-DCE)
- vinyl chloride

3.0 ANALYTICAL RESULTS AND DATA USABILITY

The following sections describe the laboratory analytical results of the submitted air samples, as well as the results of data validation and data usability. The laboratory analytical report is included as Appendix F.

The indoor air samples collected at (b)(6) were held by the laboratory until the preliminary analytical results (i.e., not (b)(6)) the associated crawlspace samples were received. USEPA indicated that if the TCE concentrations in the crawlspace samples were greater than 1 $\mu\text{g}/\text{m}^3$, then the associated indoor air sample was to be analyzed. The reported concentrations of TCE in the three crawlspace samples were reported as less than 1 $\mu\text{g}/\text{m}^3$; therefore, the associated indoor air samples were not analyzed.

A summary of the analytical results is presented in Table 2. TCE was detected at concentrations ranging from 0.16 to 0.34 $\mu\text{g}/\text{m}^3$ in the crawlspace air samples; 0.21 to 0.49 $\mu\text{g}/\text{m}^3$ in the indoor air samples; and 0.30 to 0.74 $\mu\text{g}/\text{m}^3$ in the ambient air samples. Concentrations of cis-1,2-DCE were detected in the indoor air, crawlspace air, and ambient air samples at concentrations ranging from 0.40 (estimated) to 0.25 $\mu\text{g}/\text{m}^3$. Estimated concentrations (i.e. above the method detection limit but less than the laboratory reporting limits) of trans-1,2-DCE and vinyl chloride were detected in several air samples.

3.1 DATA VALIDATION

Data validation was conducted based on procedures in the USEPA Region 4 Data Validation Standard Operating Procedures for Organic Analysis (USEPA, 2008), in conjunction with Method TO-15 SIM and the laboratory's Method TO-15 standard operating procedure. Full validation, including raw data verification and calculation checks, was completed on the laboratory data.

The data validation narrative is included in Appendix G. The results of the data validation did not indicate the presence of quality control issues.

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3.2 DATA USABILITY SUMMARY

Data quality issues were not identified during the data validation process. Data gaps from the investigation were not identified. The data set is considered to be 100 percent complete with respect to the collected data. Therefore, the data are usable for the completing the objectives set forth in the VI Work Plan and the Supplemental VI Work Plan.



4.0 INDOOR AIR SCREENING LEVEL RISK EVALUATION

AMEC evaluated air quality for residences located east of the Site as directed by USEPA. Indoor air and/or crawlspace air samples were collected on June 25, 2014, at six residences, and ambient air samples were collected from seven locations (Figure 3). Concentrations of TCE were detected above the laboratory reporting limits in each of the air samples. Estimated concentrations and concentrations above the laboratory reporting limit of cis-1,2-DCE were detected in each of the air samples. Estimated concentrations of trans-1,2-DCE and vinyl chloride were detected in several air samples. The analytical data for June April 2014 air samples are summarized in Table 2. Risk assessment tables are included in Appendix H.

4.1 EXPOSURE ASSESSMENT

In order to identify constituents of potential concern (COPCs) for the air pathway, the detected air constituents were compared to target indoor air concentrations from the USEPA's Vapor Intrusion Screening Level (VISL) Calculator, Version 3.3.1 (USEPA, 2014a) and the USEPA Regional Screening Levels (RSLs) for residential air (USEPA, 2014b). These screening levels are presented in Table H.1 and are based on a residential exposure scenario with target carcinogenic risk of 1×10^{-6} and target hazard index of 0.1. As a result of this screening step, TCE was identified as an indoor air COPC and carried through the screening-level risk evaluation. The detected concentrations of trans-1,2-DCE, and vinyl chloride were below the Target Residential Indoor VISLs/RSLs and were not carried through the screening-level risk evaluation. There is no air screening criteria for 1,2-cis-DCE.

Incremental risks and hazards were calculated using default adult and child resident exposure assumptions (Tables H.2 through H.7). The assessment assumes future residents will be present 350 days a year with exposure durations of 30 years for a residential adult (6 years as a child and 24 years as an adult for age-adjusted exposures) and 6 years for residential children (USEPA, 1991).



4.2 TOXICITY ASSESSMENT

TCE is a man-made, colorless liquid used mainly as a solvent to remove grease from metal parts. It has also been an ingredient in some consumer products such as typewriter correction fluid, adhesives, spot removers, carpet cleaners, paint strippers/removers (USEPA, 2014c), and spray fixatives (USEPA, 2014d). The possible health effects from breathing TCE depend on the levels in indoor air, the length of exposure, and whether and when a pregnant woman is exposed. According to the USEPA, women who are in the first eight weeks of pregnancy are most sensitive to TCE exposures with exposures during this time potentially increasing the risk of heart malformations in a developing fetus (USEPA, 2012). Chronic exposure to TCE may affect the immune system and increase susceptibility to infections. Exposure to TCE is associated with an increased risk of cancers of the kidney, liver, and non-Hodgkin lymphoma (USEPA, 2011a).

Toxicity values [Inhalation Reference Concentrations (RfCs) and Inhalation Unit Risks (IURs)] used in this evaluation were obtained from the USEPA Integrated Risk Information System (IRIS) (USEPA, 2011a). IRIS has released a Toxicity Assessment for TCE that recommends TCE be addressed as a potential mutagen with risk for kidney-related impacts being assessed using age-specific adjustment factors, and with liver and non-Hodgkin lymphoma (NHL) risk addressed using the standard carcinogenic risk equations. Separate TCE IURs have been derived for the kidney and liver-NHL endpoints. These IURs, the age-specific adjustment factors used to adjust the exposure intakes, and the TCE RfC used in this assessment, are listed in Appendix H, Tables H.2 through H.7.

The RfC is used to estimate non-carcinogenic inhalation hazards. The RfC is an estimate of the daily exposure to the human population (including sensitive subgroups such as children and the elderly) that is likely to be without an appreciable risk of deleterious effects. The estimated hazard is compared to a target hazard index (HI) of 1. Cumulative hazards less than 1 are not likely to be associated with systemic or non-carcinogenic health risks. Non-carcinogenic hazards associated with inhalation exposures to TCE are associated with potential damage to the thymus and heart.

Using the endpoint-specific IURs for TCE, the cumulative carcinogenic risk for the indoor vapor intrusion pathway was calculated and compared to a target risk of 1×10^{-6} . If the

cumulative carcinogenic risk for residents is less than 1×10^{-6} , risk is considered to be in the acceptable range. The IUR is characterized as an upper-bound estimate designed to be protective of the majority of the human population.

4.3 RISK CHARACTERIZATION

Concentrations of TCE in the crawlspace samples collected from (b)(6) were less than USEPA Region 4's "trigger" concentration of $1 \mu\text{g}/\text{m}^3$. Therefore, indoor air samples were not analyzed and a risk evaluation was not conducted for these residences.

The TCE indoor air concentration from (b)(6) assess potential indoor air exposures and calculate incremental risks and hazards for both adult/child and child residents (Tables H.2 and H.3, respectively). The estimated incremental risk from indoor air is 1×10^{-6} for residential adults/children and 3×10^{-7} for residential children. The estimated HIs for TCE in indoor air are 0.2 for both residential adults and children. The estimated HIs are less than 1 and the estimated incremental risks are equal to or less than 1×10^{-6} . Based on these results, the air pathway would not pose an unacceptable hazard or risk to current or future residential receptors living at (b)(6)

The TCE indoor air concentration from (b)(6) ($0.21 \mu\text{g}/\text{m}^3$) was used to assess potential indoor air exposures and calculate incremental risks and hazards for both adult/child and child residents (Tables H.4 and H.5, respectively). The estimated incremental risk from indoor air is 5×10^{-7} for residential adults/children and 1×10^{-7} for residential children. The estimated hazard indices (HIs) for TCE in indoor air are 0.1 for both residential adults and children. The estimated HIs are less than 1 and the estimated incremental risks are less than 1×10^{-6} . Based on these results, the air pathway would not pose an unacceptable hazard or risk to current or future residential receptors living at (b)(6)

The TCE indoor air concentration from (b)(6) ($1.51 \mu\text{g}/\text{m}^3$) was used to assess potential indoor air exposures and calculate incremental risks and hazards for both

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Section 552 (b)(6), Personal Privacy

adult/child and child residents (Tables H.6 and H.7, respectively). The estimated incremental risk from indoor air is 1×10^{-6} for residential adults/children and 4×10^{-7} for residential children. The estimated HIs for TCE in indoor air are 0.2 for both residential adults and children. The estimated HIs are less than 1 and the estimated incremental risks are equal to or less than 1×10^{-6} . Based on these results, the air pathway would not pose an unacceptable hazard or risk to current or future residential receptors living at (b)(6)

(b)(6)

4.4 UNCERTAINTY ANALYSIS

The intent of the current study was to evaluate current Site-specific VOC concentrations in air inside and in the vicinity of residences and to compare current concentrations to previously measured concentrations of Site-specific VOCs. Conservative risk-based screening criteria were used to complete a preliminary evaluation of risks and hazards for the residents. Key uncertainties associated with an inhalation risk evaluation include the estimation of representative exposure concentrations and exposure intakes, the choice of toxicity values, and the approach to estimating risks (USEPA, 2009).

This assessment assumes that the air concentrations at the residences will remain consistent over time, although the detected constituents are potentially biodegradable and air concentrations typically vary due to weather/seasonal fluctuations that influence volatilization, air mixing, pressure differentials, etc. The assessment also assumes that the air concentrations at the sampled locations will be spatially uniform, although air concentrations may vary within structures due to locations of underground utilities, subsurface fill and/or moisture barriers, foundation cracks, air flow, and dilution and mixing within the indoor air space. These spatial and temporal variations could affect the risk estimates calculated.

The assessment assumes that the source of TCE is the groundwater plume. However, other man-made sources of TCE may be contributing to the concentrations observed in indoor air. As noted in Section 4.2, USEPA has determined that a variety of household products can contribute to observed indoor air TCE concentrations.

The assessment assumes that future residents will be present 350 days a year with exposure durations of 30 years for a residential adult (6 years as a child and 24 years as an adult for age-adjusted exposures) and 6 years for residential children. While consistent with current USEPA risk assessment guidance, these assumptions would tend to overestimate risks because national residential tenure in one location averages approximately 9 years (USEPA, 2011b).

The non-carcinogenic reference concentration for TCE is based on cardio-malformations for pre-birth exposures that might occur during the first eight weeks of pregnancy. Otherwise, exposure limits could be 10-fold higher and still remain protective for the majority of the general public (USEPA, 2012). The possible health effects from breathing TCE depends on the levels in indoor air, the length of exposure, and whether and when a pregnant woman is exposed.

There is some degree of uncertainty associated with the characterization of risks of local residents because residential adults and children are assumed to be present in the residence for 24 hours per day for 350 days per year. Working adults and children attending day care or school would not be present continuously every day.

4.5 COMPARISON TO PREVIOUS AIR INVESTIGATIONS

Crawlspace and/or indoor air samples were previously collected by USEPA and their contractors at three of the residences sampled during this VI assessment. Ambient air samples were previously collected at the approximate location of four of the ambient air samples collected during this VI Assessment. A summary of the analytical results from the previous sampling events, as well as this VI assessment, are included in Table 2. Concentrations of detected constituents during this VI assessment are generally similar to (i.e., within an order of magnitude) constituent concentrations detected during previous sampling events.



5.0 DISCUSSION AND CONCLUSIONS

The VI assessment was conducted in accordance with the USEPA-approved VI Work Plan and the Supplemental VI Work Plan. The data collected for the assessment are considered 100 percent complete and usable for meeting the objectives presented in the VI Work Plans.

Concentrations of TCE and cis-1,2-DCE were detected in the collected air samples. Estimated concentrations (i.e., above the method detection limit, but below the laboratory reporting limit) of trans-1,2-DCE and vinyl chloride were detected in several air samples. Concentrations of detected constituents during this June 2014 VI assessment are generally comparable to (i.e., within the same order of magnitude) constituent concentrations detected during previous sampling events conducted by USEPA and its contractors.

The concentrations of TCE detected in two indoor air samples were greater than the Target Residential Indoor VISL/RSL. As a result of this screening step, TCE was identified as an indoor air COPC and carried through the screening-level risk evaluation. The estimated concentrations of trans-1,2-DCE and vinyl chloride were below the Target Residential Indoor VISLs/RSLs and were not carried through the screening-level risk evaluation. There are no inhalation VISL/RSL values issued for cis-1,2-DCE. Risk calculations were completed using the detected air concentrations of TCE in indoor air samples and comparing these concentrations to inhalation toxicity benchmarks. Table 2 contains a summary of the risk and hazard estimates for the indoor air samples.

The TCE air concentrations measured in the ambient air and residential air samples (range of 0.30 to 0.74 $\mu\text{g}/\text{m}^3$) are within the 1990 to 2005 national background indoor air concentrations range of 50th percentiles for TCE, which range from less than the reporting limit to 1.1 $\mu\text{g}/\text{m}^3$ (USEPA, 2011c). The USEPA national background indoor air concentration data were collected from homes not known or expected to be located over soil or groundwater contamination or those having effective vapor intrusion mitigation systems in place; therefore, the national background indoor air concentrations represent typical background indoor air concentrations. However, the national background indoor



concentration data might not be directly applicable for the southeastern states due to the absence of USEPA Region 4 sampling locations in the study.

The estimated hazards and risks do not indicate unacceptable risk or hazards for residential receptors potentially exposed via indoor air. Based on this assessment, and previous USEPA assessments, the need for additional indoor air sampling in the residences is not warranted at this time.



6.0 REFERENCES

- AMEC, 2014. Supplement to Vapor Intrusion Assessment Work Plan (Revision 4), CTS of Asheville, Inc. Superfund Site, EPA ID: NCD003149556, June 11, 2014.
- T N & Associates, Inc., USEPA Region 4 START, 2008. Subsurface Soil and Groundwater Sampling Report, Revision 1, Mills Gap, April 23, 2008.
- T N & Associates, Inc., USEPA Region 4 START, 2009. Vapor Sampling Letter Report, Revision 2, Mills Gap, June 16, 2009.
- USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance, OSWER Directive 9285.6-03, March 1991.
- USEPA, 2008. Data Validation Standard Operating Procedures for Organic Analyses; USEPA Region 4, Science and Ecosystem Support Division Quality Assurance Section, MTSB; Athens, Georgia; August 2008.
- USEPA, 2009. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment), Final, EPA-540-R-070-002, January 2009.
- USEPA, 2011a. Toxicological Review of Trichloroethylene (CAS No. 79-01-6) In Support of Summary Information on the Integrated Risk Information System (IRIS), EPA/635/R-09/011F, September 2011.
- USEPA, 2011b. Exposure Factors Handbook, 2011 Edition. EPA/600/R-090/052F, September 2011.
- USEPA, 2011c. Background Indoor Air Concentrations of Volatile Organic Compounds in North America Residences (1990 – 2005): A Compilation of Statistics for Assessing Vapor Intrusion, EPA 530-R-10-001, June 2011.
- USEPA Region 10, 2012. OEA Recommendations Regarding Trichloroethylene Toxicity in Human Health Risk Assessments, December 13, 2012.
- USEPA, 2014a. Vapor Intrusion Screening Level Calculator, Version 3.3.1.
- USEPA, 2014b. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (May 2014).
- USEPA, 2014c. Trichloroethylene (Technology Transfer Network-Air Toxics Website). <http://www.epa.gov/ttn/atw/hlthef/tri-ethy.html>, accessed June 12, 2014.
- USEPA, 2014d. TSCA Work Plan Chemical Risk Assessment, Trichloroethylene: Degreasing, Spot Cleaning and Arts & Crafts Uses. USEPA Document 740-R1-4002, June 2014.



TABLES

Addresses Removed

TABLE 1

Information Redacted pursuant to 5 U.S.C. Summary of Air Samples and Sampling Conditions
 Section 552 (b)(6), Personal Privacy CTS of Asheville, Inc. Superfund Site
 Asheville, North Carolina
 AMEC Project 6252-12-0006

Sample ID	(b)(6)	Date Start	Time Start/Stop	Interior Air Temperature (°F)		Ambient Air Temperature (°F)		PID Reading (ppm)		Vacuum (inches Hg)	
				Start	Stop	Start	Stop	Start	Stop	Start	Stop
AAS-07	(b)(6)	6/24/2014	9:27	NA	NA	67	67	0.0	0.0	-27.7	-6.0
CAS-07		6/24/2014	9:43	70	66	67	67	0.0	0.0	-27.7	-6.7
IAS-07		6/24/2014	10:00	73	72	67	67	0.0	0.0	-27.7	-8.7
AAS-08		6/24/2014	10:29	NA	NA	68	67	0.0	0.0	-27.7	-7.1
IAS-08		6/24/2014	10:52	74	75	68	67	0.4	0.0	-27.6	-18.8
AAS-09		6/24/2014	11:11	NA	NA	72	68	0.0	0.0	-27.7	-7.0
AAS-10		6/24/2014	11:57	NA	NA	72	72	0.0	0.0	-27.7	-14.6
IAS-10		6/24/2014	12:10	74	73	72	74	0.5	0.0	-27.8	-6.7
IAS-11		6/24/2014	14:10	75	65	72	69	1.9	0.0	-27.7	-6.7
CAS-11		6/24/2014	14:17	67	58	72	69	0.2	0.0	-27.7	-13.9
AAS-12		6/24/2014	14:42	NA	NA	66	72	0.0	0.0	-27.7	-6.9
IAS-12		6/24/2014	14:52	73	68	66	72	0.1	0.0	-27.6	-5.1
AAS-13		6/24/2014	15:38	NA	NA	76	75	0.0	0.0	-27.6	-12.6
CAS-13		6/24/2014	15:50	68	62	76	77	0.0	0.0	-27.7	-5.6
IAS-13		6/24/2014	16:05	77	75	76	77	0.0	0.0	-27.7	-6.6
AAS-14		6/24/2014	16:47	NA	NA	77	76	0.0	0.0	-27.8	-4.0
FD-06 (IAS-08)		6/24/2014	10:52	74	75	68	67	0.4	0.0	-27.7	-18.8
FD-07 (CAS-11)		6/24/2014	14:17	67	58	72	69	0.2	0.0	-27.6	-13.8
FD-08 (AAS-13)		6/24/2014	15:38	NA	NA	76	75	0.0	0.0	-27.7	-12.6
TB-03		lab prep	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. °F: degrees Fahrenheit
2. PID: photoionization detector
3. ppm: parts per million
4. Hg: mercury
5. NA: not applicable

Prepared By: SEK 6/26/14

Checked By: RMC 7/09/14

TABLE 2
Summary of June 2014 and Historical Laboratory Analytical Results with Risk Assessment Evaluation Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
AMEC Project 6252-12-0006

(b)(6)

Date	Sample ID	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
6/25/2014	AAS-07	0.49	0.18	<0.010	<0.011
6/25/2014	AAS-08	0.32	0.11	<0.011	<0.012
8/7/2008	MG29-AMB	<0.358	<0.264	<0.264	<0.171
6/25/2014	AAS-09	0.30	0.10	<0.022	<0.024
6/25/2014	AAS-10	0.74	0.25	<0.035	0.13 J
6/25/2014	AAS-12	0.64	0.25	<0.023	<0.024
8/7/2008	MG10RE-AMB	0.983	<0.264	<0.264	<0.171
6/25/2014	AAS-13	0.42	0.14	<0.031	<0.033
6/25/2014	FD-08 (AAS-13)	0.41	0.15	<0.031	0.048 J
8/7/2008	MG28-AMB	<0.358	<0.264	<0.264	<0.171
8/7/2008	MG100W-AMB	0.419	<0.264	<0.264	<0.171
6/25/2014	AAS-14	0.57	0.20	0.024 J	0.025 J
8/7/2008	MG46-AMB	<0.358	<0.264	<0.264	<0.171

Date	Sample ID	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
6/25/2014	CAS-07	0.34	0.099	<0.011	<0.012
6/25/2014	CAS-11	0.16	0.040 J	<0.016	<0.017
6/25/2014	FD-07 (CAS-11)	0.16	0.042 J	<0.016	<0.017
8/7/2008	MGSC100W	0.380	<0.264	<0.264	<0.171
12/13/2007	MGSC100W	2.130	0.424	<0.198	<0.128
6/25/2014	CAS-13	0.25	0.078 J	<0.021	<0.022
8/7/2008	MGSC28	1.48	<0.264	<0.264	<0.171
12/13/2007	MGSC38	2.83	0.551	<0.198	<0.128

Date	Sample ID	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	TCE Hazard Quotient*	TCE Cancer Risk (Adult)	TCE Cancer Risk (Child)
6/25/2014	IAS-08	0.21	0.060 J	<0.024	<0.026	0.1	5 E-07	1 E-07
6/25/2014	FD-06 (IAS-08)	0.21	0.058 J	<0.024	<0.026	0.1	5 E-07	1 E-07
8/7/2008	MGIA29	<0.358	<0.264	<0.264	<0.171			
6/25/2014	IAS-10	0.49	0.12	<0.011	<0.012	0.2	1 E-06	3 E-07
6/25/2014	IAS-12	0.51	0.17	0.016 J	<0.011	0.2	1 E-06	4 E-07

Notes:

- Concentrations are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
- TCE = trichloroethene; cis-1,2-DCE = cis-1,2-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene; VC = vinyl chloride
- J - Concentration is estimated.
- < - Constituent not detected above the indicated method detection limit.
- * - for both adult and adult/child.
- The risk evaluation did not include historical sample results, as the historical samples were collected prior to the current USEPA risk assessment guidance.

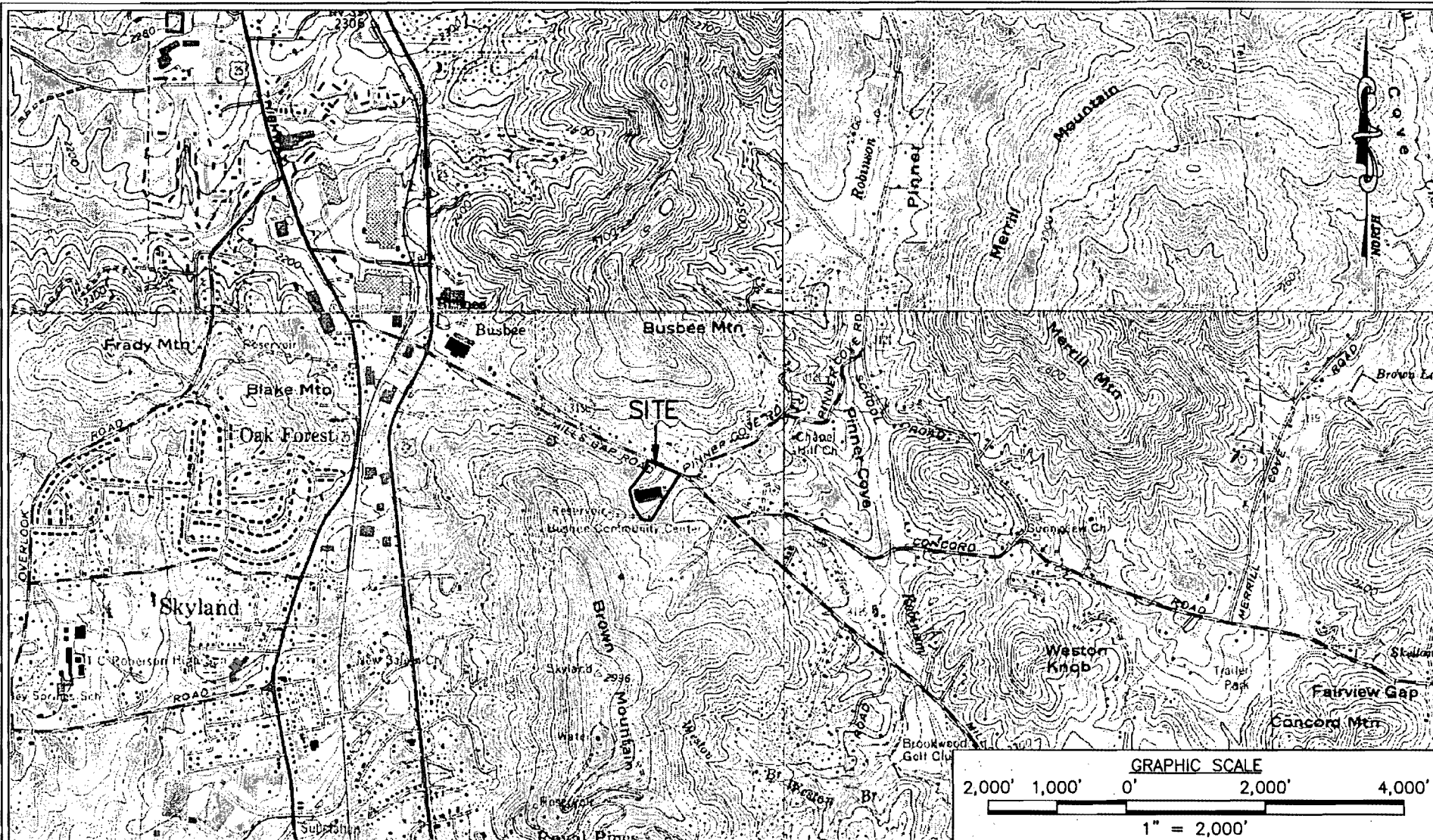
Prepared By: SEK 7/2/14
Checked By: MEW 7/2/14

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Address Removed



FIGURES



TOPOGRAPHIC SITE LOCATION MAP
 CTS OF ASHEVILLE, INC. SUPERFUND SITE
 ASHEVILLE, NORTH CAROLINA

amec

DRAWN: SEK

ENG CHECK: --

DATE: AUGUST 2014

PROJECT: 6252-12-0006

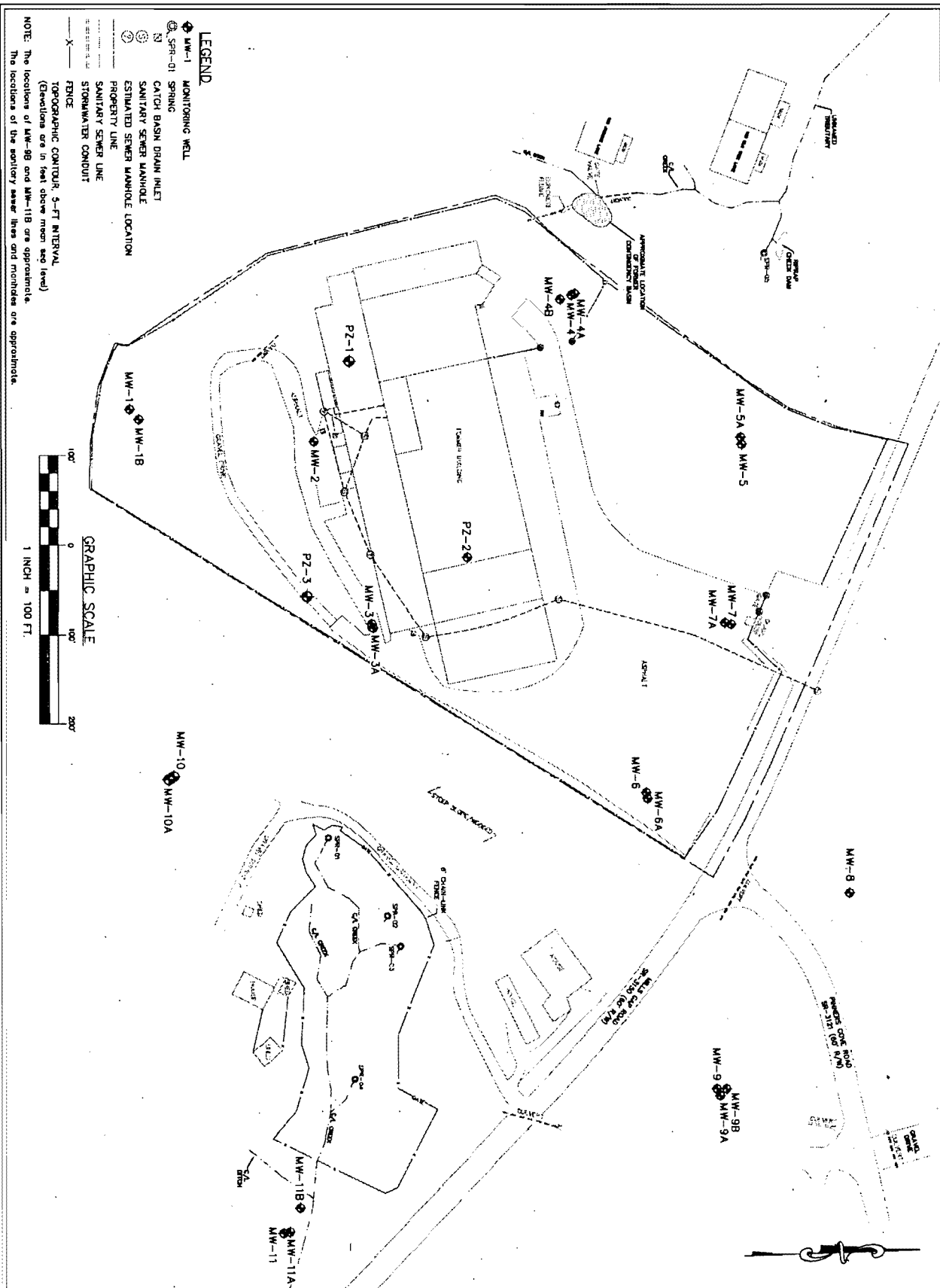
DFT CHECK: MEW

APPROVAL: MEW

SCALE: 1" = 2,000'

FIGURE: 1

REFERENCE: USGS QUADRANGLES: ASHEVILLE (1961), OTEEN (1962), FRUITLAND (1978) AND SKYLAND (1978)

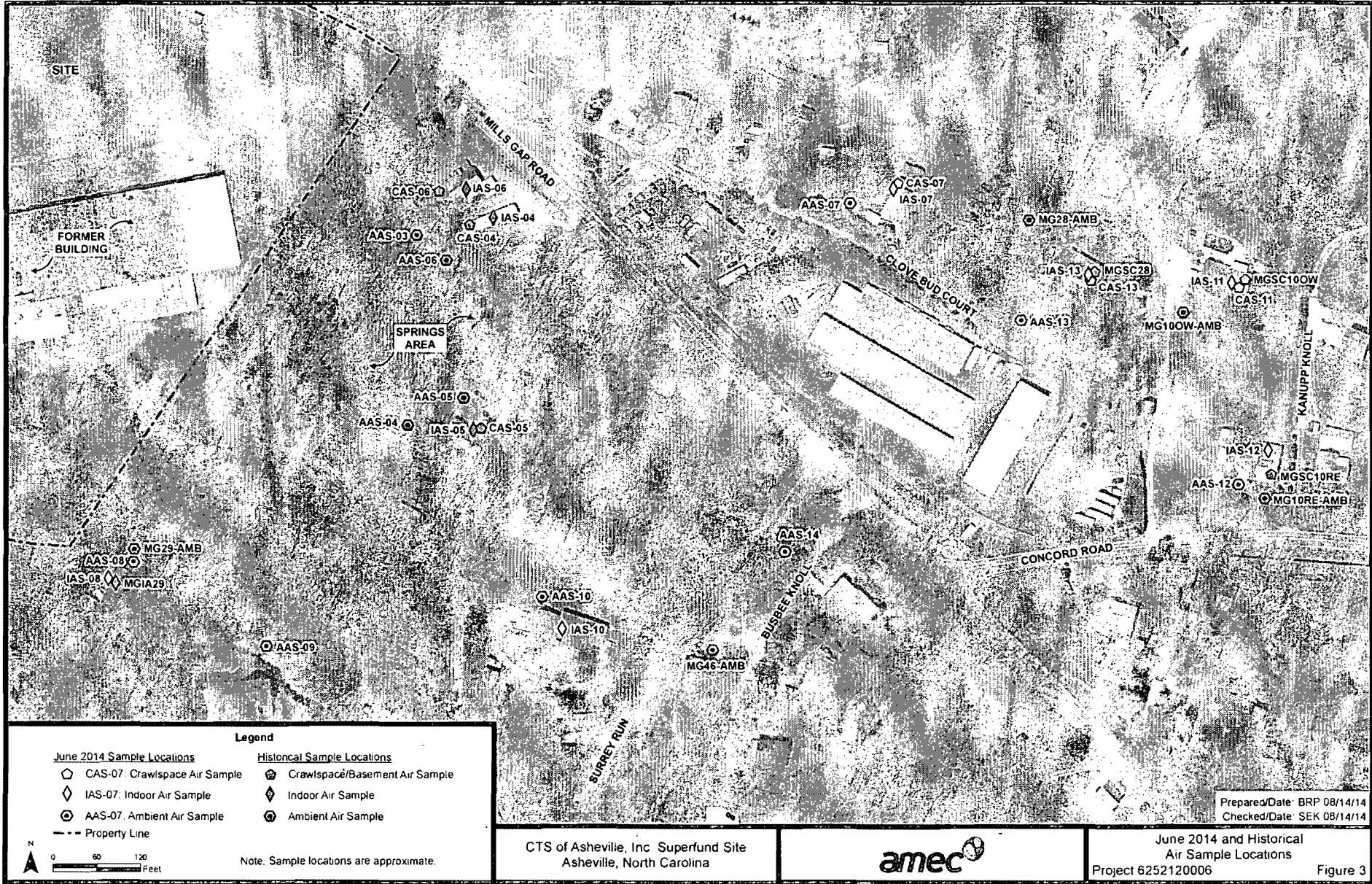


SITE MAP
CTS OF ASHEVILLE, INC. SUPERFUND SITE
ASHEVILLE, NORTH CAROLINA



DRAWN: SEK	ENG CHECK: --	DATE: AUGUST 2014	JOB: 6252-12-0006
DFT CHECK: MEW	APPROVAL: MEW	SCALE: 1"=100'	FIG: 2

REFERENCE: SURVEY PREPARED BY FREELAND & ASSOCIATES.



amec

[illegible]

ACCESS AGREEMENTS



CONSENT FOR ACCESS
CTS of Asheville, Inc. Superfund Site
VAPOR INTRUSION ASSESSMENT

1. I, **(b)(6)** ☒ current owner, tenant, or authorized
rep **(b)(6)** and as such I have the authority to sign this
authorization (please check the appropriate box).

2. I grant authorization to representatives of the U. S. Environmental Protection Agency (EPA), North Carolina Department of Environment and Natural Resources (NCDENR), and CTS Corporation to access my property for the purpose of walking across the property, collection of air samples, taking measurements, and documenting sampling activities through written notes and photographs. Authorized representatives include officers, employees, contractors or other authorized representatives acting on the behalf of EPA, NCDENR and CTS Corporation for the purposes of these activities.
3. I recognize that the EPA's request and use of the Properties is undertaken pursuant to its response authority under Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9604(a) et. seq., as amended. Under CERCLA, the EPA must perform certain steps in order to determine the extent of contamination at a Site and to determine the appropriate cleanup activities for that Site. Under the EPA's response authority, the EPA is authorized to request access to the Property (which are located near the former CTS plant).
4. I grant permission for the EPA to provide a copy of this form to CTS Corporation and its contractors in order for them to have the necessary information to conduct this work.
5. I grant permission for the EPA to provide historical sampling data and information related to sampling conducted on my property to CTS Corporation and their contractors for the purposes of performing the work required for the Remedial Investigation and Feasibility Study for the CTS of Asheville, Inc. Superfund Site.

(b)(6)

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CONSENT FOR ACCESS
CTS of Asheville, Inc. Superfund Site
VAPOR INTRUSION ASSESSMENT

Addresses Removed

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

1. I, **(b)(6)**, am the current owner, tenant, or authorized representative of the property located at **(b)(6)**, and as such I have the authority to sign this consent.
2. I grant authorization to representatives of the U. S. Environmental Protection Agency (EPA), North Carolina Department of Environment and Natural Resources (NCDENR), and CTS Corporation to access my property for the purpose of walking across the property, collection of air samples, taking measurements, and documenting sampling activities through written notes and photographs. Authorized representatives include officers, employees, contractors or other authorized representatives acting on the behalf of EPA, NCDENR and CTS Corporation for the purposes of these activities.
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4. I grant permission for the EPA to provide a copy of this form to CTS Corporation and its contractors in order for them to have the necessary information to conduct this work.
5. I grant permission for the EPA to provide historical sampling data and information related to sampling conducted on my property to CTS Corporation and their contractors for the purposes of performing the work required for the Remedial Investigation and Feasibility Study for the CTS of Asheville, Inc. Superfund Site.

6/23/14

(b)(6)

Email address: None

If applicable, Tenant Information:

Signature of Tenant: _____ Date: _____

Printed Name of Tenant: _____

Tenant Phone Number: _____

Tenant Email Address: _____



CONSENT FOR ACCESS
CTS of Asheville, Inc. Superfund Site
VAPOR INTRUSION ASSESSMENT

1. I, **(b)(6)**, am the ☒ current owner, ☐ tenant, or ☐ authorized representative of the owner of the property located at **(b)(6)** and as such I have the authority to sign this authorization (please check the appropriate box).

2. I grant authorization to representatives of the U. S. Environmental Protection Agency (EPA), North Carolina Department of Environment and Natural Resources (NCDENR), and CTS Corporation to access my property for the purpose of walking across the property, collection of air samples, taking measurements, and documenting sampling activities through written notes and photographs. Authorized representatives include officers, employees, contractors or other authorized representatives acting on the behalf of EPA, NCDENR and CTS Corporation for the purposes of these activities.
3. I recognize that the EPA's request and use of the Properties is undertaken pursuant to its response authority under Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9604(a) et. seq., as amended. Under CERCLA, the EPA must perform certain steps in order to determine the extent of contamination at a Site and to determine the appropriate cleanup activities for that Site. Under the EPA's response authority, the EPA is authorized to request access to the Property (which are located near the former CTS plant).
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(b)(6)

Accesses Reviewed
Information Redacted pursuant to 5 U.S.C.
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CONSENT FOR ACCESS *Addresses Removed*
CTS of Asheville, Inc. Superfund Site
VAPOR INTRUSION ASSESSMENT
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

1. I, **(b)(6)** ☒ current owner, tenant, or authorized
re **(b)(6)** and as such I have the authority to sign this
authorization (please check the appropriate box).

2. I grant authorization to representatives of the U. S. Environmental Protection Agency (EPA), North Carolina Department of Environment and Natural Resources (NCDENR), and CTS Corporation to access my property for the purpose of walking across the property, collection of air samples, taking measurements, and documenting sampling activities through written notes and photographs. Authorized representatives include officers, employees, contractors or other authorized representatives acting on the behalf of EPA, NCDENR and CTS Corporation for the purposes of these activities.
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5. I grant permission for the EPA to provide historical sampling data and information related to sampling conducted on my property to CTS Corporation and their contractors for the purposes of performing the work required for the Remedial Investigation and Feasibility Study for the CTS of Asheville, Inc. Superfund Site.

(b)(6)



CONSENT FOR ACCESS
CTS of Asheville, Inc. Superfund Site
VAPOR INTRUSION ASSESSMENT

(b)(6)

I am the current owner, tenant, or authorized
and as such I have the authority to sign this

2. I grant authorization to representatives of the U. S. Environmental Protection Agency (EPA), North Carolina Department of Environment and Natural Resources (NCDENR), and CTS Corporation to access my property for the purpose of walking across the property, collection of air samples, taking measurements, and documenting sampling activities through written notes and photographs. Authorized representatives include officers, employees, contractors or other authorized representatives acting on the behalf of EPA, NCDENR and CTS Corporation for the purposes of these activities.

3. I recognize that the EPA's request and use of the Properties is undertaken pursuant to its response authority under Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9604(a) et. seq., as amended. Under CERCLA, the EPA must perform certain steps in order to determine the extent of contamination at a Site and to determine the appropriate cleanup activities for that Site. Under the EPA's response authority, the EPA is authorized to request access to the Property (which are located near the former CTS plant).

I grant permission for the EPA to provide a copy of this form to CTS Corporation and its contractors in order for them to have the necessary information to conduct this work.

I grant permission for the EPA to provide historical sampling data and information related to sampling conducted on my property to CTS Corporation and their contractors for the purposes of performing the work required for the Remedial Investigation and Feasibility Study for the CTS of Asheville, Inc. Superfund Site.

(b)(6)

If applicable, Tenant Information:

Signature of Tenant: _____ Date: _____

Printed Name of Tenant: _____

Tenant Phone Number: _____

Tenant Email Address: _____

Addresses Renamed
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy



APPENDIX B

OCCUPIED DWELLING QUESTIONNAIRES

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

Date: 6/23/2014

(b)(6)

(b)(6)

Work Phone: _____

2. What is the best time to call to speak with you? _____ At: Work ☐ or Home ☐?
3. Are you the Owner ☒, Renter ☐, Other ☐ (please specify) _____
of this Home/Structure?
4. Total number of occupants/persons at this location? 1
Number of children? _____ Ages? _____
5. How long have you lived at this location? owned for 40 yrs - 1973
lived here 1973 to early 1980's. Moved back in ~1 yr ago

General Home Description

6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☐,
Condominium ☐, Townhouse ☐, Other ☐ _____
7. Home/Structure Description: number of floors 1 (lower level addition
Basement? Yes ☐ No ☐ slab on grate)
Crawl Space? Yes ☒ No ☐
If Yes, under how much of the house's area? _____%
8. Age of Home/Structure: _____ years, Not sure/Unknown ☐ 1973 mobile home
9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☒, Brick ☐, Concrete ☐, Cement block ☐, Other ☐ _____
mobile home
10. Foundation Construction (check all that apply):
Concrete slab ☒ lower addition - mobile home
Fieldstone ☐
Concrete block ☐

Elevated above ground/grade ☐

Other _____

11. What is the source of your drinking water (check all that apply)?

Public water supply ☒

Private well ☐

Bottled water ☐

Other, please specify _____

12. Do you have a private well for purposes other than drinking?

Yes ☐ No ☒

If yes, please describe what you use the well
for: _____

13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐

14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☐ No ☒ *below house - east*

Basement Description, please check appropriate boxes.

If you do not have a basement go to question 23.

(No basement)

15. Is the basement finished ☐ or unfinished ☐?

16. If finished, how many rooms are in the basement? _____

How many are used for more than 2 hours/day? _____

17. Is the basement floor (check all that apply) concrete ☐, tile ☐, carpeted ☐, dirt ☐,
other ☐ (describe) _____?

18. Are the basement walls poured concrete ☐, cement block ☐, stone ☐, wood ☐, brick ☐,
other ☐ _____?

19. Does the basement have a moisture problem (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

20. Does the basement ever flood (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

21. Does the basement have any of the following? (check all that apply) Floor cracks ☐,

Wall cracks ☐, Sump ☐, Floor drain ☐, Other hole/opening in floor ☐

(describe) _____

22. Are any of the following used or stored in the basement (check all that apply)
Paint ☐ Paint stripper/remover ☐ Paint thinner ☐
Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
Yes, use dry-cleaning regularly (at least weekly) ☐
Yes, use dry-cleaning infrequently (monthly or less) ☐
Yes, work at a dry cleaning service ☐
No ☒
26. Does anyone in your home use solvents at work?
Yes ☐ If yes, how many persons _____
No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
Basement ☐
Upstairs utility room ☒ adjacent to kitchen
Kitchen ☐
Garage ☐
Use a Laundromat ☐
Other, please specify ☐ _____
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) of home heating do you have (check all that apply) *use electric because of price of oil*
Fuel type: Gas ☐, Oil ☒, Electric ☒, Wood ☐, Coal ☐, Other _____
Heat conveyance system: Forced hot air ☒
Forced hot water ☐
Steam ☐
Radiant floor heat ☐
Wood stove ☒ in addition
Coal furnace ☐
Fireplace ☐
Other _____

- 1 window unit
31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
 Central air conditioning ☐
 Window air conditioning unit(s) ☒
 Other ☐, please specify _____
32. Do you use any of the following? Room fans ☒ Ceiling fans ☐, Attic fan ☐
 Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☒
33. Has your home had termite or other pesticide treatment: Yes ☐ No ☒ Unknown ☐
 If yes, please specify type of pest controlled, _____
 and approximate date of service _____
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐
 Water heater location: Basement ☐, Upstairs utility room ☒, Garage ☐, Other ☐ (please describe) built in bedroom
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐ _____
36. Is there a stove exhaust hood present? Yes ☒ No ☐
 Does it vent to the outdoors? Yes ☐ No ☒ Site
37. Smoking in Home:
 None ☒, Rare (only guests) ☐, Moderate (residents light smokers) ☐,
 Heavy (at least one heavy smoker in household) ☐
38. If yes to above, what do they smoke?
 Cigarettes ☐ Cigars ☐
 Pipe ☐ Other ☐
39. Do you regularly use air fresheners? Yes ☒ No ☐ spray Glade
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
 Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
 wood finishing ☐, Other ☐ Please specify what type of hobby: _____
41. General family/home use of consumer products (please circle appropriate): Assume that
 Never = never used, Hardly ever = less than once/month, Occasionally = about
 once/month, Regularly = about once/week, and Often = more than once/week.

Product _____ Frequency of Use _____

Spray-on deodorant

Never

Hardly ever

Occasionally

Regularly

Often

Aerosol deodorizers	Never	Hardly ever	Occasionally	Regularly	Often
Insecticides <i>ants</i>	Never	Hardly ever	Occasionally	Regularly	Often
Disinfectants	Never	Hardly ever	Occasionally	Regularly	Often

toilet cleaner

(Question 41, continued)

Product	Frequency of Use				
Window cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Spray-on oven cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Nail polish remover	Never	Hardly ever	Occasionally	Regularly	Often
Hair sprays	Never	Hardly ever	Occasionally	Regularly	Often

42. Please check weekly household cleaning practices:

- Dusting ☐
- Dry sweeping ☐
- Vacuuming ☒
- Polishing (furniture, etc) ☐
- Washing/waxing floors ☐
- Other ☐ _____

43. Other comments: _____

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

Date: 6/23/2014

1. Name: [redacted] Daughter

Address: [redacted]

Home Phone: _____ Work Phone: _____

2. What is the best time to call to speak with you? — At: Work ☐ or Home ☐?

3. Are you the Owner ☒, Renter ☐, Other ☐ (please specify) _____
of this Home/Structure?

4. Total number of occupants/persons at this location? 5
Number of children? 2 Ages? 18 yr, 16 yr - Males

5. How long have you lived at this location? [redacted] - 3 yrs recently lived here
[redacted] 30 yrs

General Home Description

6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☐,
Condominium ☐, Townhouse ☐, Other ☐ _____

7. Home/Structure Description: number of floors 1
Basement? Yes ☐ No ☐
Crawl Space? Yes ☒ No ☐
If Yes, under how much of the house's area? _____ %

8. Age of Home/Structure: 32 years, Not sure/Unknown ☐

9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☒ Brick ☐, Concrete ☐, Cement block ☐, Other ☐ _____

10. Foundation Construction (check all that apply):
Concrete slab ☐
Fieldstone ☐
Concrete block ☒ vent - closed

Elevated above ground/grade ☒
Other _____

11. What is the source of your drinking water (check all that apply)?

Public water supply ☒

Private well ☐

Bottled water ☐

Other, please specify _____

12. Do you have a private well for purposes other than drinking?

Yes ☐ No ☒

formerly
- well in front yard closed - spring for filling pool.
If yes, please describe what you use the well for: *- truck in water for pool.*

13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐

14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☒ No ☐

ditch / creek to south

Basement Description, please check appropriate boxes.

If you do not have a basement go to question 23.

15. Is the basement finished ☐ or unfinished ☐?

16. If finished, how many rooms are in the basement? _____

How many are used for more than 2 hours/day? _____

17. Is the basement floor (check all that apply) concrete ☐, tile ☐, carpeted ☐, dirt ☐, other ☐ (describe) _____?

18. Are the basement walls poured concrete ☐, cement block ☐, stone ☐, wood ☐, brick ☐, other ☐ _____?

19. Does the basement have a moisture problem (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

20. Does the basement ever flood (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

21. Does the basement have any of the following? (check all that apply) Floor cracks ☐, Wall cracks ☐, Sump ☐, Floor drain ☐, Other hole/opening in floor ☐ (describe) _____

22. Are any of the following used or stored in the basement (check all that apply)
Paint ☐ Paint stripper/remover ☐ Paint thinner ☐
Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
Yes, use dry-cleaning regularly (at least weekly) ☐
Yes, use dry-cleaning infrequently (monthly or less) ☐
Yes, work at a dry cleaning service ☐
No ☒
26. Does anyone in your home use solvents at work?
Yes ☐ If yes, how many persons _____
No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
Basement ☐
Upstairs utility room ☐
Kitchen ☒ - near back door
Garage ☐
Use a Laundromat ☐
Other, please specify ☐ _____
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) of home heating do you have (check all that apply)
Fuel type: Gas ☐, Oil ☐, Electric ☒, Wood ☒, Coal ☐, Other _____
Heat conveyance system: Forced hot air ☒
Forced hot water ☐
Steam ☐
Radiant floor heat ☐
Wood stove ☒
Coal furnace ☐
Fireplace ☐
Other _____

31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
 Central air conditioning ☒ *heat pump*
 Window air conditioning unit(s) ☐
 Other ☐ please specify *in bedrooms & L.R.*
32. Do you use any of the following? Room fans ☐, Ceiling fans ☒, Attic fan ☒
 Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☒ *closed*
33. Has your home had termite or other pesticide treatment: Yes ☐ No ☒ Unknown ☐
 If yes, please specify type of pest controlled, _____
 and approximate date of service _____
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐
 Water heater location: Basement ☐, Upstairs utility room ☐, Garage ☒, Other ☐ (please describe) _____
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐
36. Is there a stove exhaust hood present? Yes ☒ No ☐
 Does it vent to the outdoors? Yes ☒ No ☐
37. Smoking in Home:
 None ☒, Rare (only guests) ☐, Moderate (residents light smokers) ☐,
 Heavy (at least one heavy smoker in household) ☐ *smoke outside*
38. If yes to above, what do they smoke?
 Cigarettes ☒ Cigars ☐
 Pipe ☐ Other ☐
39. Do you regularly use air fresheners? Yes ☒ No ☐ *plugs - blade*
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
 Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
 wood finishing ☐, Other ☐ Please specify what type of hobby: _____

41. General family/home use of consumer products (please circle appropriate): Assume that
 Never = never used, Hardly ever = less than once/month, Occasionally = about
 once/month, Regularly = about once/week, and Often = more than once/week.

Product	Frequency of Use				
Spray-on deodorant	(Never)	Hardly ever	Occasionally	Regularly	Often

1000-1000-1000
1000-1000-1000

Aerosol deodorizers	Never	<u>Hardly ever</u>	Occasionally	Regularly	Often
Insecticides	Never	<u>Hardly ever</u>	Occasionally	Regularly	Often
Disinfectants	Never	<u>Hardly ever</u>	Occasionally	Regularly	Often

Chlorox cleaner *Wysol*

(Question 41, continued)

Product	Frequency of Use				
Window cleaners	Never	Hardly ever	Occasionally	<u>Regularly</u>	Often
Spray-on oven cleaners	<u>Never</u>	Hardly ever	Occasionally	Regularly	Often
Nail polish remover	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often
Hair sprays	Never	Hardly ever	Occasionally	Regularly	<u>Often</u>

42. Please check weekly household cleaning practices:

Dusting ☒
 Dry sweeping ☐
 Vacuuming ☒
 Polishing (furniture, etc) ☐
 Washing/waxing floors ☐ *swiffer some*
 Other ☐

43. Other comments: -cleaned carpet recently

Addresses Redacted

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

Date:

6/23/2014

(b)(6)

Home Phone: _____ Work Phone: _____

2. What is the best time to call to speak with you? — At: Work ☐ or Home ☐?
3. Are you the Owner ☐, Renter ☒, Other ☐ (please specify) _____
of this Home/Structure?
4. Total number of occupants/persons at this location? 2 (Both female)
Number of children? 1 Ages? 8 yrs female
5. How long have you lived at this location? 4 yrs

General Home Description

6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☐,
Condominium ☐, Townhouse ☐, Other ☐ _____
7. Home/Structure Description: number of floors 1
Basement? Yes ☐ No ☒
Crawl Space? Yes ☒ No ☐
If Yes, under how much of the house's area? _____%
8. Age of Home/Structure: _____ years, Not sure/Unknown ☐
9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☒, Brick ☐, Concrete ☐, Cement block ☐, Other ☐ _____
10. Foundation Construction (check all that apply):
Concrete slab ☐
Fieldstone ☐
Concrete block ☒

- Elevated above ground/grade ☐
Other _____
11. What is the source of your drinking water (check all that apply)?
Public water supply ☒
Private well ☐
Bottled water ☐
Other, please specify _____
12. Do you have a private well for purposes other than drinking?
Yes ☐ No ☐
If yes, please describe what you use the well
for: _____
13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐
14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☐ No ☒

Basement Description, please check appropriate boxes.
If you do not have a basement go to question 23.

15. Is the basement finished ☐ or unfinished ☐?
16. If finished, how many rooms are in the basement? _____
How many are used for more than 2 hours/day? _____
17. Is the basement floor (check all that apply) concrete ☐, tile ☐, carpeted ☐, dirt ☐,
other ☐ (describe) _____?
18. Are the basement walls poured concrete ☐, cement block ☐, stone ☐, wood ☐, brick ☐,
other ☐ _____?
19. Does the basement have a moisture problem (check one only)?
Yes, frequently (3 or more times/yr) ☐
Yes, occasionally (1-2 times/yr) ☐
Yes, rarely (less than 1 time/yr) ☐
No ☐
20. Does the basement ever flood (check one only)?
Yes, frequently (3 or more times/yr) ☐
Yes, occasionally (1-2 times/yr) ☐
Yes, rarely (less than 1 time/yr) ☐
No ☐
21. Does the basement have any of the following? (check all that apply) Floor cracks ☐,
Wall cracks ☐, Sump ☐, Floor drain ☐, Other hole/opening in floor ☐
(describe) _____

22. Are any of the following used or stored in the basement (check all that apply)
 Paint ☐ Paint stripper/remover ☐ Paint thinner ☐
 Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
 Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
 If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
 If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
 Yes, use dry-cleaning regularly (at least weekly) ☐
 Yes, use dry-cleaning infrequently (monthly or less) ☐
 Yes, work at a dry cleaning service ☐
 No ☒
26. Does anyone in your home use solvents at work?
 Yes ☐ If yes, how many persons _____
 No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
 Basement ☐ *washer in bathroom*
 Upstairs utility room ☐ *dryer in kitchen*
 Kitchen ☐
 Garage ☐
 Use a Laundromat ☐
 Other, please specify ☐ _____
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) of home heating do you have (check all that apply)
 Fuel type: Gas ☐, Oil ☒, Electric ☐, Wood ☐, Coal ☐, Other _____
 Heat conveyance system: Forced hot air ☒ *ceiling vents*
 Forced hot water ☐
 Steam ☐
 Radiant floor heat ☐
 Wood stove ☐
 Coal furnace ☐
 Fireplace ☐
 Other _____

31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
 Central air conditioning ☐
 Window air conditioning unit(s) ☒ Kitchen Bedrooms & L.R.
 Other ☐, please specify Kitchen
32. Do you use any of the following? Room fans ☒, Ceiling fans ☒, Attic fan ☐
 Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☐
33. Has your home had termite or other pesticide treatment: Yes ☐ No ☒ Unknown ☐
 If yes, please specify type of pest controlled, _____
 and approximate date of service _____
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐

 Water heater location: Basement ☐, Upstairs utility room ☐, Garage ☐, Other ☐ (please describe) Kitchen - counter top model
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐

36. Is there a stove exhaust hood present? Yes ☒ No ☐
 Does it vent to the outdoors? Yes ☐ No ☐ Not sure
37. Smoking in Home: Smoke outside
 None ☒, Rare (only guests) ☐, Moderate (residents light smokers) ☐,
 Heavy (at least one heavy smoker in household) ☐
38. If yes to above, what do they smoke?
 Cigarettes ☒, Cigars ☐
 Pipe ☐, Other ☐
39. Do you regularly use air fresheners? Yes ☐ No ☒
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
 Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
 wood finishing ☐, Other ☐ Please specify what type of hobby: _____
41. General family/home use of consumer products (please circle appropriate): Assume that—
Never = never used, **Hardly ever** = less than once/month, **Occasionally** = about once/month, **Regularly** = about once/week, and **Often** = more than once/week.

Product

Frequency of Use

Spray-on deodorant

Never

Hardly ever

Occasionally

Regularly

Often

Aerosol deodorizers	Never	Hardly ever	Occasionally	Regularly	Often
Insecticides	Never	Hardly ever	Occasionally	Regularly	Often
Disinfectants	Never	Hardly ever	Occasionally	Regularly	Often

Pine Sol

(Question 41, continued)

Product	Frequency of Use				
Window cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Spray-on oven cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Nail polish remover	Never	Hardly ever	Occasionally	Regularly	Often
Hair sprays	Never	Hardly ever	Occasionally	Regularly	Often

42. Please check weekly household cleaning practices:

Dusting ☒
 Dry sweeping ☒
 Vacuuming ☒
 Polishing (furniture, etc) ☐
 Washing/waxing floors ☐ mop
 Other ☐

43. Other comments: Spend time in living room

- Crawlspace is 'flooded' with sewage - apparent major sewage leak underneath house

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

MEW 6/24/14

(b)(6)

Home Phone: _____ Work Phone: _____

2. What is the best time to call to speak with you? _____ At: Work ☐ or Home ☐?

3. Are you the Owner ☒, Renter ☐, Other ☐ (please specify) _____
of this Home/Structure?

4. Total number of occupants/persons at this location? 3 up & 2 downstairs
Number of children? 2 Ages? 18 yrs downstairs - male. other male 52 yrs old
Travis: 15 yrs upstairs - leaving Monday - visiting for summer before college
5. How long have you lived at this location? since 1974
downstairs renters 7 to 13 yrs Brandon

General Home Description

6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☒,
Condominium ☐, Townhouse ☐, Other ☐ _____

7. Home/Structure Description: number of floors 1 with basement
Basement? Yes ☒ No ☐ partial basement on west side
Crawl Space? Yes ☐ No ☒
If Yes, under how much of the house's area? _____%

8. Age of Home/Structure: built 1974 years, Not sure/Unknown ☐

9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☐, Brick ☒, Concrete ☐, Cement block ☐, Other ☐ _____

10. Foundation Construction (check all that apply):
Concrete slab ☒ on east end
Fieldstone ☐
Concrete block ☒ on west end / basement

- Elevated above ground/grade ☐
 Other _____
11. What is the source of your drinking water (check all that apply)?
 Public water supply ☒
 Private well ☐
 Bottled water ☐
 Other, please specify _____
12. Do you have a private well for purposes other than drinking?
 Yes ☐ No ☒
 If yes, please describe what you use the well for: _____
13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐ to north of house
14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☐ No ☒

Basement Description, please check appropriate boxes.

If you do not have a basement go to question 23.

15. Is the basement finished ☒ or unfinished ☐? Apartment storage area to north.
16. If finished, how many rooms are in the basement? 3 - bed & kitchen/L.R.
 How many are used for more than 2 hours/day? 3
17. Is the basement floor (check all that apply) concrete ☒, tile ☐, carpeted ☒, dirt ☐, other ☐ (describe) _____? Apartment
18. Are the basement walls poured concrete ☐, cement block ☒, stone ☐, wood ☐, brick ☐, other ☐?
19. Does the basement have a moisture problem (check one only)?
 Yes, frequently (3 or more times/yr) ☐
 Yes, occasionally (1-2 times/yr) ☐
 Yes, rarely (less than 1 time/yr) ☐
 No ☒ Dehumidifier in use - subslab in apartment area
 have radon system - 5 yrs ago
20. Does the basement ever flood (check one only)?
 Yes, frequently (3 or more times/yr) ☐
 Yes, occasionally (1-2 times/yr) ☐
 Yes, rarely (less than 1 time/yr) ☐
 No ☒
21. Does the basement have any of the following? (check all that apply) Floor cracks ☐, Wall cracks ☐, Sump ☐, Floor drain ☐, Other hole/opening in floor ☐
 (describe) _____ No

22. Are any of the following used or stored in the basement (check all that apply)
 Paint ☒ Paint stripper/remover ☐ Paint thinner ☐
 Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
 Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
 If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
 If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
 Yes, use dry-cleaning regularly (at least weekly) ☐
 Yes, use dry-cleaning infrequently (monthly or less) ☐
 Yes, work at a dry cleaning service ☐
 No ☒
26. Does anyone in your home use solvents at work?
 Yes ☐ If yes, how many persons _____
 No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
 Basement ☐
 Upstairs utility room ☒ *near kitchen - none downstairs*
 Kitchen ☐
 Garage ☐
 Use a Laundromat ☐
 Other, please specify ☐ _____
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) ^{gas logs} of home heating do you have (check all that apply)
 Fuel type: Gas ☒, Oil ☐, Electric ☒, Wood ☐, Coal ☐, Other _____
 Heat conveyance system: Forced hot air ☒
 Forced hot water ☐
 Steam ☐
 Radiant floor heat ☐
 Wood stove ☒ *present in basement - not used*
 Coal furnace ☐
 Fireplace ☐
 Other _____

- heat pump*
31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
 Central air conditioning ☒
 Window air conditioning unit(s) ☐
 Other ☐, please specify LP & Beds & kitchen
32. Do you use any of the following? Room fans ☐, Ceiling fans ☒, Attic fan ☐
 Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☐
33. Has your home had termite or other pesticide treatment: Yes ☒ No ☐ Unknown ☐
 If yes, please specify type of pest controlled, _____
 and approximate date of service 6 or 7 years ago
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐

 Water heater location: Basement ☒, Upstairs utility room ☐, Garage ☐, Other ☐ (please describe) _____
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐

36. Is there a stove exhaust hood present? Yes ☒ No ☐
 Does it vent to the outdoors? Yes ☐ No ☒ file
37. Smoking in Home:
 None ☒ Rare (only guests) ☐, Moderate (residents light smokers) ☐,
 Heavy (at least one heavy smoker in household) ☐
38. If yes to above, what do they smoke?
 Cigarettes ☐ Cigars ☐
 Pipe ☐ Other ☐
39. Do you regularly use air fresheners? Yes ☐ No ☒
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
 Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
 wood finishing ☐, Other ☐ Please specify what type of hobby: _____
41. General family/home use of consumer products (please circle appropriate): Assume that
Never = never used, **Hardly ever** = less than once/month, **Occasionally** = about
 once/month, **Regularly** = about once/week, and **Often** = more than once/week.

Product _____ Frequency of Use _____

Spray-on deodorant

Never

Hardly ever

Occasionally

Regularly

Often

Aerosol deodorizers	Never	Hardly ever	Occasionally	Regularly	Often
Insecticides	Never	Hardly ever	Occasionally	Regularly	Often
Disinfectants	Never	Hardly ever	Occasionally	Regularly	Often

side people

(Question 41, continued)

<u>Product</u>	<u>Frequency of Use</u>				
			<i>3x/yr</i>		
Window cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Spray-on oven cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Nail polish remover	Never	Hardly ever	Occasionally	Regularly	Often
Hair sprays	Never	Hardly ever	Occasionally	Regularly	Often

42. Please check weekly household cleaning practices:

- Dusting ☐
- Dry sweeping ☐
- Vacuuming ☒
- Polishing (furniture, etc) ☐
- Washing/waxing floors ☐
- Other ☐ _____

43. Other comments: _____

Address: Redacted

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

Date: 10/23/2014

(b)(6)

Home Phone: _____ Work Phone: _____

2. What is the best time to call to speak with you? — At: Work ☐ or Home ☐?
3. Are you the Owner ☐, Renter ☒, Other ☐ (please specify) _____
of this Home/Structure?
4. Total number of occupants/persons at this location? 6
Number of children? 2 Ages? 4yr & 2yr
5. How long have you lived at this location? 2 yrs

General Home Description

6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☐,
Condominium ☐, Townhouse ☐, Other ☐ _____
7. Home/Structure Description: number of floors 1
Basement? Yes ☐ No ☒
Crawl Space? Yes ☒ No ☐
If Yes, under how much of the house's area? 100 %
8. Age of Home/Structure: 20 +/- years, ^{1997 tax records} Not sure/Unknown ☐
9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☒, Brick ☐, Concrete ☐, Cement block ☐, Other ☐ _____
10. Foundation Construction (check all that apply):
Concrete slab ☐
Fieldstone ☐
Concrete block ☒

Elevated above ground/grade ☐

Other _____

11. What is the source of your drinking water (check all that apply)?

Public water supply ☒

Private well ☐

Bottled water ☐

Other, please specify _____

12. Do you have a private well for purposes other than drinking?

Yes ☐ No ☒

If yes, please describe what you use the well
for: _____

13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐

14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☒ No ☐

SE of house drain lies to south
pond to north

Basement Description, please check appropriate boxes.

If you do not have a basement go to question 23.

15. Is the basement finished ☐ or unfinished ☐?

16. If finished, how many rooms are in the basement? _____

How many are used for more than 2 hours/day? _____

17. Is the basement floor (check all that apply) concrete ☐, tile ☐, carpeted ☐, dirt ☐,
other ☐ (describe) _____?

18. Are the basement walls poured concrete ☐, cement block ☐, stone ☐, wood ☐, brick ☐,
other ☐ _____?

19. Does the basement have a moisture problem (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

20. Does the basement ever flood (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☐

21. Does the basement have any of the following? (check all that apply) Floor cracks ☐,
Wall cracks ☐, Sump ☐, Floor drain ☐, Other hole/opening in floor ☐
(describe) _____

22. Are any of the following used or stored in the basement (check all that apply)
 Paint ☐ Paint stripper/remover ☐ Paint thinner ☐
 Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
 Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
 If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
 If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
 Yes, use dry-cleaning regularly (at least weekly) ☐
 Yes, use dry-cleaning infrequently (monthly or less) ☐
 Yes, work at a dry cleaning service ☐
 No ☒
26. Does anyone in your home use solvents at work?
 Yes ☐ If yes, how many persons _____
 No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
 Basement ☐
 Upstairs utility room ☐
 Kitchen ☐
 Garage ☐
 Use a Laundromat ☐
 Other, please specify ☒ Dining room area - west side of house
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) of home heating do you have (check all that apply)
 Fuel type: Gas ☐, Oil ☐, Electric ☒, Wood ☐, Coal ☐, Other _____
 Heat conveyance system: Forced hot air ☒
 Forced hot water ☐
 Steam ☐
 Radiant floor heat ☐
 Wood stove ☐
 Coal furnace ☐
 Fireplace ☐
 Other _____

heat pump

31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
Central air conditioning ☐
Window air conditioning unit(s) ☐
Other ☐ please specify _____
32. Do you use any of the following? Room fans ☒, Ceiling fans ☒, Attic fan ☐
Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☒
33. Has your home had termite or other pesticide treatment: Yes ☐ No ☒ Unknown ☐
If yes, please specify type of pest controlled, _____
and approximate date of service _____
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐
Water heater location: Basement ☐, Upstairs utility room ☐, Garage ☐, Other ☒ (please describe) pantry in kitchen
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐
36. Is there a stove exhaust hood present? Yes ☐ No ☒
Does it vent to the outdoors? Yes ☐ No ☐
37. Smoking in Home:
None ☒ Rare (only guests) ☐, Moderate (residents light smokers) ☐,
Heavy (at least one heavy smoker in household) ☐
38. If yes to above, what do they smoke?
Cigarettes ☐ Cigars ☐
Pipe ☐ Other ☐
39. Do you regularly use air fresheners? Yes ☐ No ☒
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
wood finishing ☐, Other ☐ Please specify what type of hobby: _____
41. General family/home use of consumer products (please circle appropriate): Assume that
Never = never used, Hardly ever = less than once/month, Occasionally = about
once/month, Regularly = about once/week, and Often = more than once/week.

Product	Frequency of Use				
Spray-on deodorant	Never	Hardly ever	Occasionally	Regularly	Often

Aerosol deodorizers	Never	Hardly ever	Occasionally	Regularly	Often
Insecticides	Never	Hardly ever	Occasionally	Regularly	Often
Disinfectants	Never	Hardly ever	Occasionally	Regularly	Often

sick

(Question 41, continued)

Product	Frequency of Use				
Window cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Spray-on oven cleaners	Never	Hardly ever	Occasionally	Regularly	Often
Nail polish remover	Never	Hardly ever	Occasionally	Regularly	Often
Hair sprays	Never	Hardly ever	Occasionally	Regularly	Often

42. Please check weekly household cleaning practices:

Dusting ☐
 Dry sweeping ☒
 Vacuuming ☒
 Polishing (furniture, etc) ☐
 Washing/waxing floors ☐ mopping
 Other ☐

43. Other comments: _____

OCCUPIED DWELLING QUESTIONNAIRE

Indoor Air Assessment Survey

Date: 6/23/2014

(b)(6)

Home Phone: _____ Work Phone: _____

2. What is the best time to call to speak with you? — At: Work ☐ or Home ☐?
3. Are you the Owner ☒, Renter ☐, Other ☐ (please specify) _____
of this Home/Structure?
4. Total number of occupants/persons at this location? 4
Number of children? 2 Ages? 7 & 8 yrs (both males)
5. How long have you lived at this location? Lylea - 8 yrs

General Home Description

- Larry Jr since 1985
new addition - 2009 - basement & Boys room / TV room
6. Type of Home/Structure (check only one): Single Family Home ☒, Duplex ☐,
Condominium ☐, Townhouse ☐, Other ☐ _____
7. Home/Structure Description: number of floors 3 1/2
Basement? Yes ☒ No ☐ Basement, first floor & 10 ft
Crawl Space? Yes ☐ No ☒
If Yes, under how much of the house's area? _____ %
Built in 1985
8. Age of Home/Structure: _____ years, Not sure/Unknown ☐
9. General Above-Ground Home/Structure construction (check all that apply):
Wood ☒, Brick ☐, Concrete ☐, Cement block ☐, Other ☐ _____
10. Foundation Construction (check all that apply):
Concrete slab ☐
Fieldstone ☐
Concrete block ☒ Basement waterproofed on upper side
no basement vents

Elevated above ground/grade ☐

Other _____

11. What is the source of your drinking water (check all that apply)?

Public water supply ☒

Private well ☐

Bottled water ☐

Other, please specify _____

12. Do you have a private well for purposes other than drinking?

Yes ☐ No ☒

If yes, please describe what you use the well for: _____

13. Do you have a septic system? Yes ☒ No ☐ Not used ☐ Unknown ☐

to north of house

14. Do you have standing water outside your home (pond, ditch, swale)? Yes ☐ No ☒

Basement Description, please check appropriate boxes.

If you do not have a basement go to question 23.

15. Is the basement finished ☒ or unfinished ☐?

16. If finished, how many rooms are in the basement? *2*

How many are used for more than 2 hours/day? *2 rooms for 3 hr classes*

17. Is the basement floor (check all that apply) concrete ☒ tile ☐ carpeted ☐ dirt ☐ other ☐ (describe) _____?

18. Are the basement walls poured concrete ☐ cement block ☒ stone ☐ wood ☐ brick ☐ other ☐ _____?

19. Does the basement have a moisture problem (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☒

dehumidifier

20. Does the basement ever flood (check one only)?

Yes, frequently (3 or more times/yr) ☐

Yes, occasionally (1-2 times/yr) ☐

Yes, rarely (less than 1 time/yr) ☐

No ☒

21. Does the basement have any of the following? (check all that apply) Floor cracks ☐

Wall cracks ☐ Sump ☐ Floor drain ☐ Other hole/opening in floor ☐

(describe) _____

hd

- No - used for gym*
22. Are any of the following used or stored in the basement (check all that apply)
 Paint ☐ Paint stripper/remover ☐ Paint thinner ☐
 Metal degreaser/cleaner ☐ Gasoline ☐ Diesel fuel ☐ Solvents ☐ Glue ☐
 Laundry spot removers ☐ Drain cleaners ☐ Pesticides ☐
23. Have you recently (within the last six months) done any painting or remodeling in your home? Yes ☐ No ☒
 If yes, please specify what was done, where in the home, and what month:

24. Have you installed new carpeting in your home within the last year? Yes ☐ No ☒
 If yes, when and where? _____
25. Do you regularly use or work in a dry cleaning service (check only one box)?
 Yes, use dry-cleaning regularly (at least weekly) ☐
 Yes, use dry-cleaning infrequently (monthly or less) ☐
 Yes, work at a dry cleaning service ☐
 No ☒
26. Does anyone in your home use solvents at work?
 Yes ☐ If yes, how many persons _____
 No ☒ If no, go to question 28
27. If yes for question 26 above, are the work clothes washed at home? Yes ☐ No ☐
28. Where is the washer/dryer located?
 Basement ☐
 Upstairs utility room ☒ *adjacent to kitchen*
 Kitchen ☐
 Garage ☐
 Use a Laundromat ☐
 Other, please specify ☐ _____
29. If you have a dryer, is it vented to the outdoors? Yes ☒ No ☐
30. What type(s) of home heating do you have (check all that apply)
Close
 Fuel type: Gas ☐, Oil ☒, Electric ☐, Wood ☐, Coal ☐, Other _____
 Heat conveyance system: Forced hot air ☒ *Indiv. unit*
 Forced hot water ☐
 Steam ☐
 Radiant floor heat ☐
 Wood stove ☐
 Coal furnace ☐
 Fireplace ☐
 Other _____

31. Do you have air conditioning? Yes ☒ No ☐. If yes, please check the appropriate type(s)
 Central air conditioning ☐
 Window air conditioning unit(s) ☒ in living room
 Other ☐, please specify _____
32. Do you use any of the following? Room fans ☐, Ceiling fans ☒, Attic fan ☐
 Do you ventilate using the fan-only mode of your central air conditioning or forced air heating system? Yes ☐ No ☐
33. Has your home had termite or other pesticide treatment: Yes ☐ No ☒ Unknown ☐
 If yes, please specify type of pest controlled, _____
 and approximate date of service _____
34. Water Heater Type: Gas ☐, Electric ☒, By furnace ☐, Other ☐
 Water heater location: Basement ☒, Upstairs utility room ☐, Garage ☐, Other ☐ (please describe) _____
35. What type of cooking appliance do you have? Electric ☒, Gas ☐, Other ☐
36. Is there a stove exhaust hood present? Yes ☒ No ☐
 Does it vent to the outdoors? Yes ☐ No ☒ file
37. Smoking in Home:
 None ☒, Rare (only guests) ☐, Moderate (residents light smokers) ☐,
 Heavy (at least one heavy smoker in household) ☐
38. If yes to above, what do they smoke?
 Cigarettes ☐ Cigars ☐
 Pipe ☐ Other ☐
39. Do you regularly use air fresheners? Yes ☒ No ☐ Glade spray; plug-in also
40. Does anyone in the home have indoor home hobbies of crafts involving: None ☒
 Heating ☐, soldering ☐, welding ☐, model glues ☐, paint ☐, spray paint,
 wood finishing ☐, Other ☐ Please specify what type of hobby: _____
41. General family/home use of consumer products (please circle appropriate): Assume that
 Never = never used, Hardly ever = less than once/month, Occasionally = about
 once/month, Regularly = about once/week, and Often = more than once/week.

Product	Frequency of Use
Spray-on deodorant	<input checked="" type="radio"/> Never <input type="radio"/> Hardly ever <input type="radio"/> Occasionally <input type="radio"/> Regularly <input type="radio"/> Often

Aerosol deodorizers	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often
Insecticides	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often
Disinfectants	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often

once or twice/professional

(Question 41, continued)

Product	Frequency of Use				
Window cleaners	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often
Spray-on oven cleaners	Never	<u>Hardly ever</u>	<u>Occasionally</u>	Regularly	Often
Nail polish remover	Never	Hardly ever	<u>Occasionally</u>	Regularly	Often
Hair sprays	Never	<u>Hardly ever</u>	<u>Occasionally</u>	Regularly	Often

once per year

42. Please check weekly household cleaning practices:

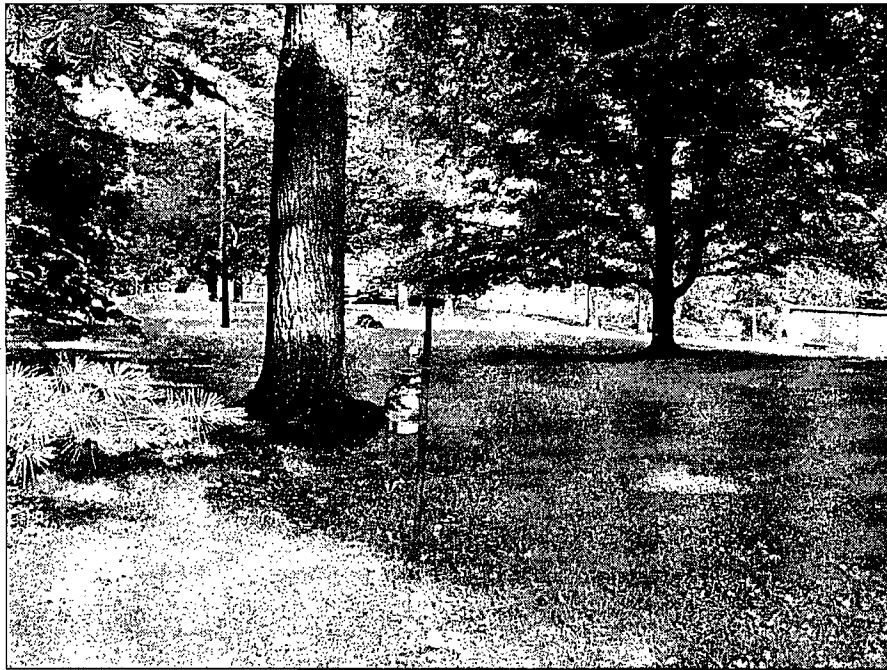
Dusting ☒
 Dry sweeping ☐
 Vacuuming ☒ *mopping*
 Polishing (furniture, etc) ☒ *lysol*
Washing/waxing floors ☒
 Other ☐

43. Other comments: _____

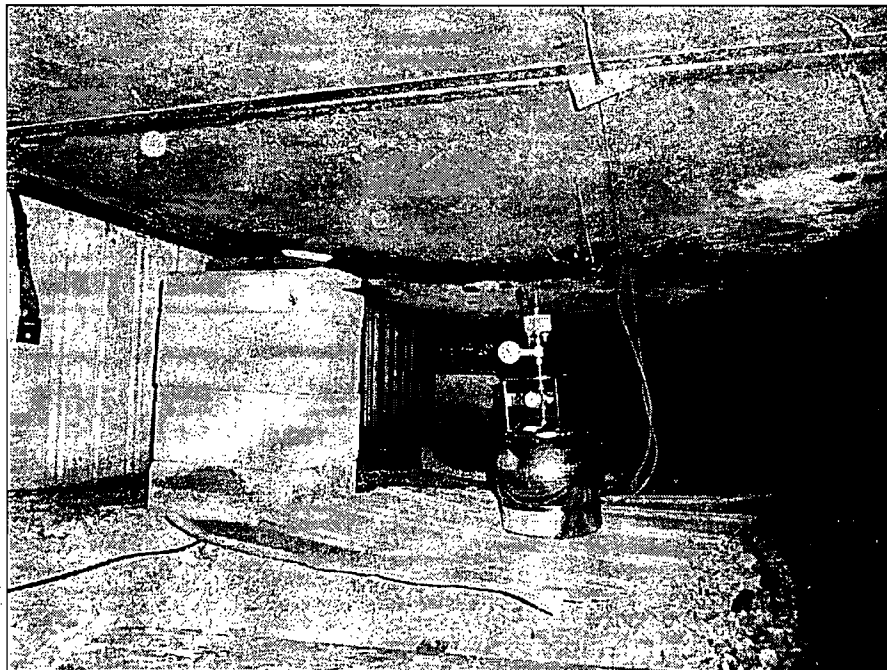
APPENDIX C

PHOTOGRAPHS OF SAMPLING ACTIVITIES

Address *Revised*
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy



Photograph No. 1: View of ambient air sample (AAS-07).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 2: View of crawlspace air sample (CAS-07).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

Addresses Removed
 Information Redacted pursuant to 5 U.S.C.
 Section 552 (b)(6), Personal Privacy



Photograph No. 3: View of indoor air sample (IAS-07).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 4: View of ambient air sample (AAS-08).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

Information Redacted pursuant to 5 U.S.C.
 Section 552 (b)(6), Personal Privacy

Addresses Replaced

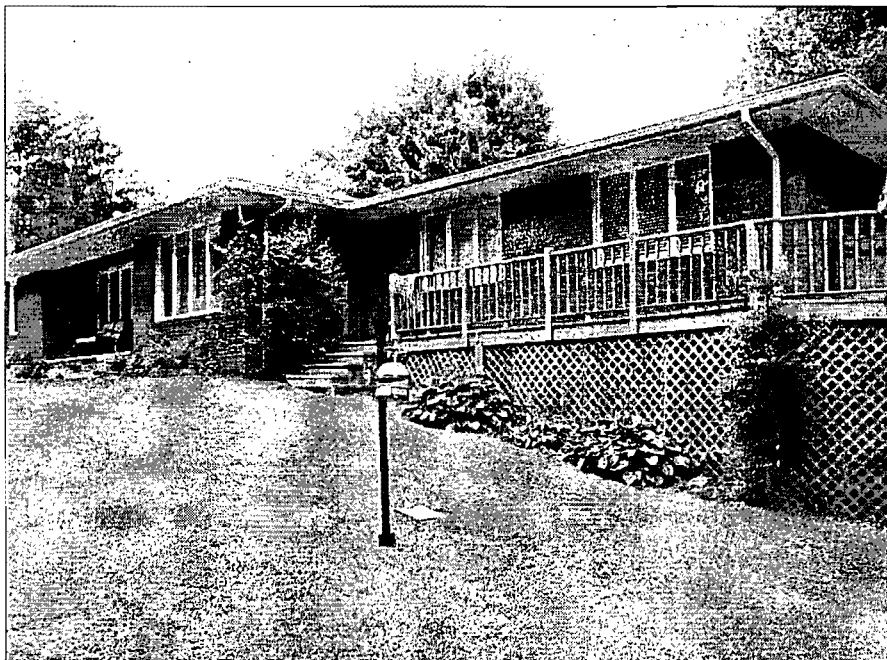


Photograph No. 5: View of indoor air sample (IAS-08) with duplicate (FD-06).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 6: View of ambient air sample (AAS-09).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

Address *Removed*
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy



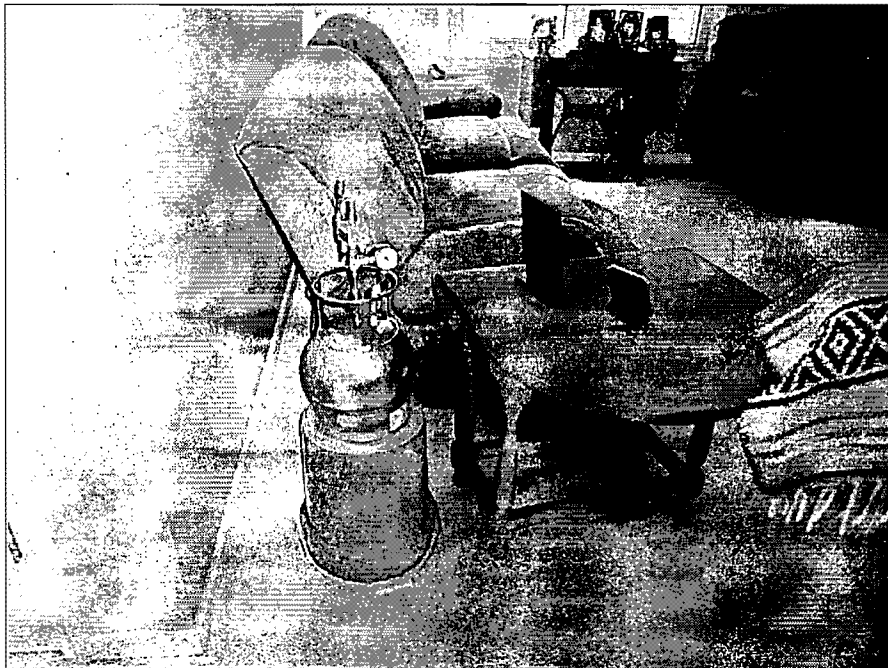
Photograph No. 7: View of ambient air sample (AAS-10).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 8: View of indoor air sample (IAS-10).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

Information Redacted pursuant to 5 U.S.C.
 Section 552 (b)(6), Personal Privacy

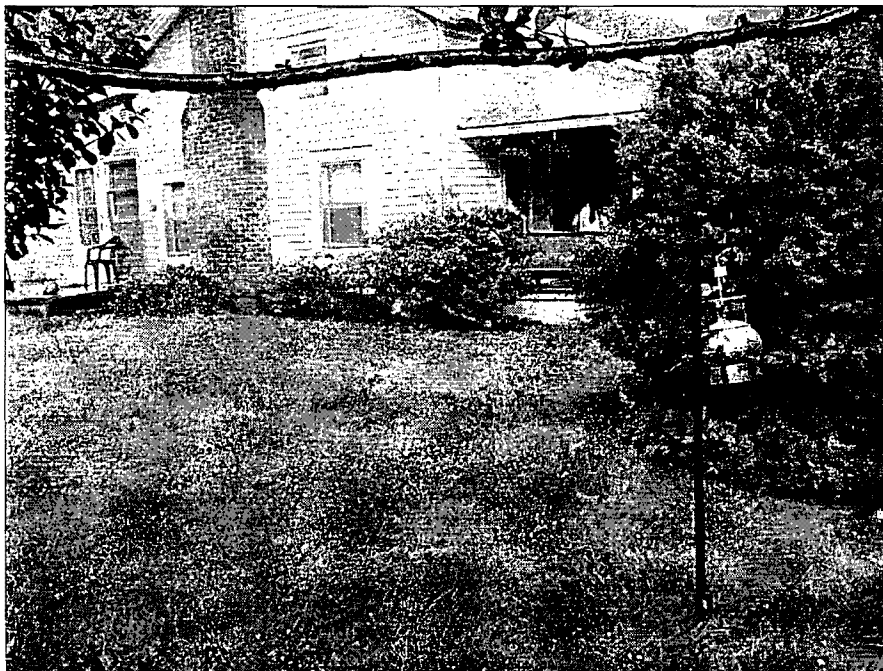
Addressed Revised



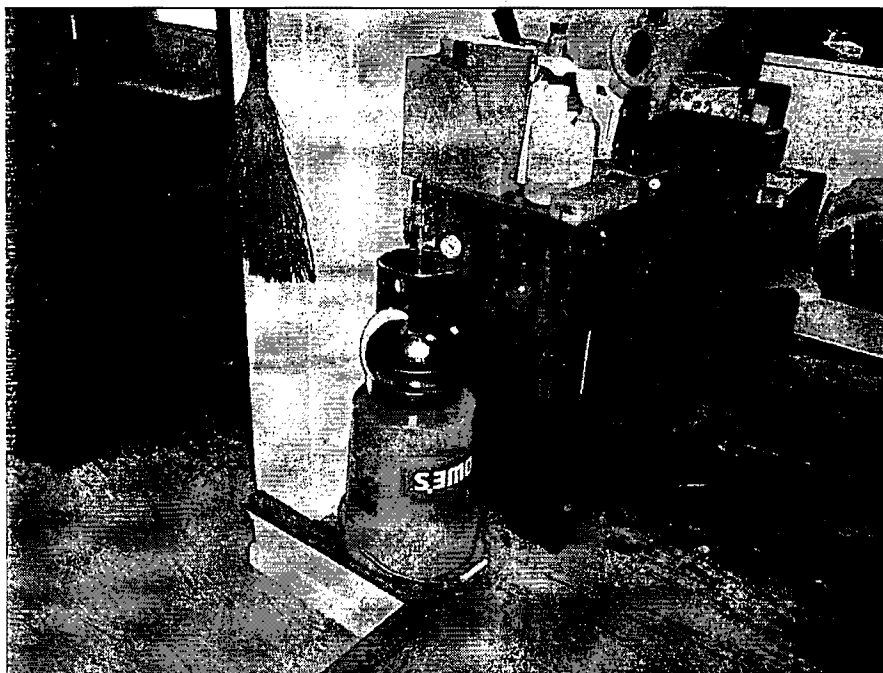
Photograph No. 9: View of indoor air sample (IAS-11).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



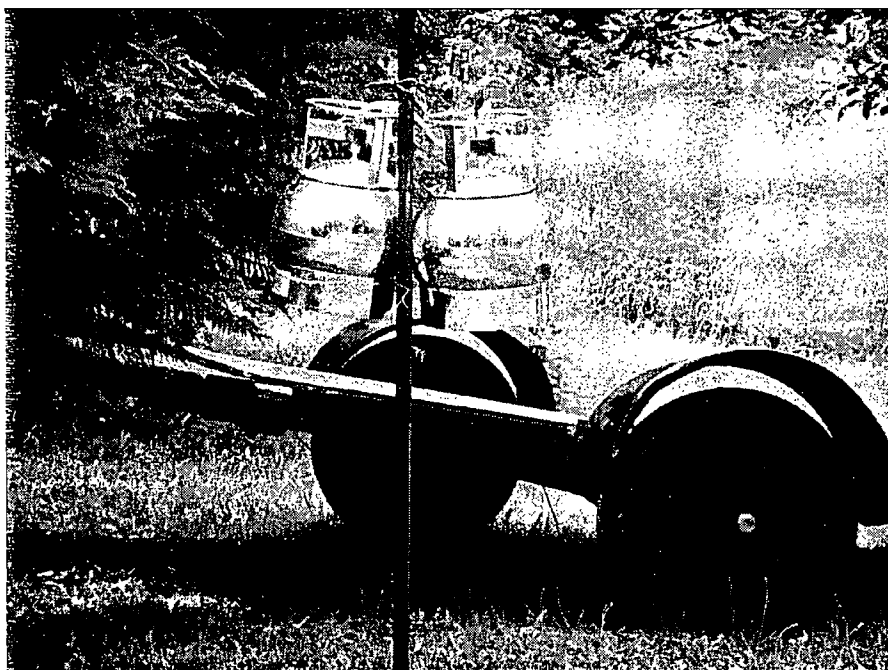
Photograph No. 10: View of crawlspace air sample (CAS-11) with duplicate (FD-07).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 11: View of ambient air sample (AAS-12).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 12: View of indoor air sample (IAS-12).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

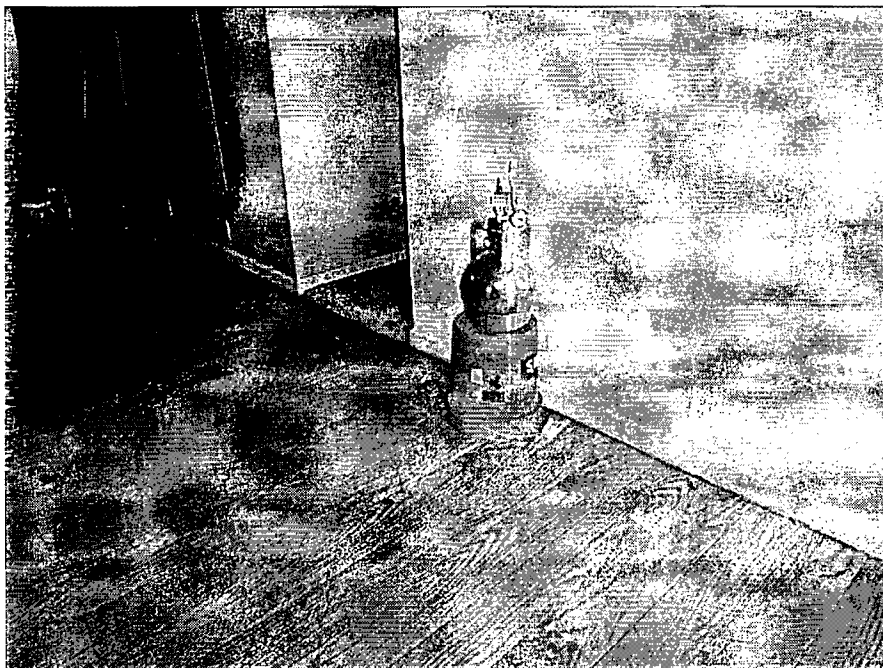


Photograph No. 13: View of ambient air sample (AAS-13) with duplicate (FD-08).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14



Photograph No. 14: View of crawlspace air sample (CAS-13).	Location: (b)(6)
Photographer: Kirk Weir (AMEC)	Date: 6/24/14

Address Removed
 Information Redacted pursuant to 5 U.S.C. Section 552 (b)(6), Personal Privacy



Photograph No. 15: View of indoor air sample (IAS-13).

Location: (b)(6)

Photographer: Kirk Weir (AMEC)

Date: 6/24/14



Photograph No. 16: View of ambient air sample (AAS-14).

Location: (b)(6)

Photographer: Kirk Weir (AMEC)

Date: 6/24/14

Address removed

Information Redacted pursuant to 5 U.S.C.
 Section 552 (b)(6), Personal Privacy



APPENDIX D

LOGBOOK AND FIELD DATA RECORDS

Advises removed

Location Asheville, NC Date 6/23/14 19
Project / Client CTB of Asheville, Inc.
0252120006 W. Wallace Amer page 1 of 3

09:00 Matt Wallace & Kirk went to meet [redacted] & Samantha V-Foster w/ EPA - Tailgate safety in Earth Fare parking lot

09:10 - Nobody home @ [redacted] (b)(6)
- Cannot get occupant to come to door - [redacted] (b)(6)

09:25 - Arranged to go to [redacted] (b)(6) at early - left [redacted] (b)(6)
- Filled out Occupied Dwelling Questionnaire for [redacted] (b)(6)
- Identified tentative sample locations [redacted] (b)(6)

10:00 - left [redacted] (b)(6) & went to [redacted] (b)(6) id present
[redacted] (b)(6) indicates to sample at [redacted] (b)(6) house instead of hers. [redacted] (b)(6)
- travel to [redacted] (b)(6)

Location Asheville, NC Date 6/23/14

Project / Client CTS of Asheville, Inc.

10257120006 M. Wallace / AMEZ Page 2/3

- Complete Occupied Dwelling Questionnaire (b)(6)
- Selected indoor air sample location
- 11:00 - Back to (b)(6)
- Mr. Singleton tried to wake up occupant - not successful
- 11:45 - Travel to (b)(6) for appointment
- Nobody there - tenants not there
- owner was going to meet us - went to store instead
- 12:15 - left (b)(6) for lunch
- 13:00 - Arrived at (b)(6)
- Completed Questionnaire with tenant
- selected sampling location
- crawlspace 'flooded' with sewage
- notified tenant & left
- 13:45 - Went to (b)(6) (Back upper house)
- Completed Questionnaire with daughter of owners
- Selected sample locations

Location Asheville, NC Date 6/23/14

Project / Client CTS of Asheville, Inc.

10257120006 M. Wallace / AMEZ Page 3/3

- 14:30 - left (b)(6)
- stopped by (b)(6) to see if occupant there
- was not there
- 14:40 - went to (b)(6) as possible tenant drove by on (b)(6)
- 14:50 - Nobody at (b)(6)
- left area

~~Addresses Received~~
 Information Redacted pursuant to 5 U.S.C. Section 552 (b)(6), Personal Privacy

NEW
 6/23/14

Location

Asheville, NC

Date

6/24/13

Project / Client

CTR of Asheville, TN.

1025212.0000

M. Williams / AMET page 1 of 3

	MEU Wkly - AMET Ryan - DTJE
09:00	Safety brief Nile - NCDOWN
09:05	Arrive @ (b)(6)
09:27	Deploy AAS-07
	Remove screen at oralispace door
09:43	Deploy AAS-07
	Initial canister selected for indoor is dead
10:00	Deploy AAS-07
10:08	Mob to (b)(6) house
	- Rest of cert personnel to meet us there
10:29	Deploy AAS-08 at (b)(6)
10:52	Deploy AAS-08 and FD-06
	- Media personnel present
	Depart at 11:00
11:10	Deploy Ambient #2 to (b)(6)
	(b)(6) - AAS-09
11:16	Left AAS-09 location along with media and others
11:57	Deploy Ambient #1 for (b)(6) - AAS-10
	Media and others at location

Accesses Reviewed

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

Location

Asheville, NC

Date

6/24/13

Project / Client

CTR of Asheville

1025212.0000

M. Williams / AMET page 2 of 3

	- Radio system in home - basement
	- Tenants in basement of home
	- Computer questionnaire
12:10	Deploy AAS-10
12:15	try to leave but cars blocking
12:30	leave (b)(6)
	to - work
13:35	Arrive @ (b)(6)
	- could not wake up occupant
14:10	Deploy AAS-11 - deployed first because of occupant schedule
	for side up tomorrow
14:17	Deploy AAS-11
14:42	Deploy AAS-12 at (b)(6)
	(b)(6) - under house
	- Blunder working on garage
14:52	Deploy AAS-12
15:00	leave (b)(6)
	- Fill out questionnaire
15:30	Deploy AAS-13 at FD-8
15:50	Deploy AAS-13
16:05	Deploy AAS-13

Location Asheville, NC Date 6/24/14
 Project / Client CRS of Asheville, Inc.
6/25/2000 W. Wallace / AMEL page 3/3

- No access to (b)(6)
- Mob to Busbee knoll
- 16:42 - Deploy AAS-14
- 17:00 - Finish at Busbee
- 17:20 - Leave area

- Ryan - OTIE
- Summon the U-Fisher - EPA

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 Section 552 (b)(6), Personal Privacy

Adrian S. Leonard

WFLA
 6/24/14

Location Asheville, NC Date 6/15/14
 Project / Client CRS of Asheville, Inc.
6/25/2000 W. Wallace / AMEL page 1 of 2

- 09:00 - Safety meeting
- 09:05 - Arrive @ (b)(6)
- MOB WFLA - AMEL
- Ryan - OTIE
- 09:27 - Stop pick up AAS-07
- Summon the U-Fisher with EPA
- arrive
- 09:43 - Stop pick up CRS-07
- reattach wire screen to
- crab space opening
- 10:00 - stop pick up IAS-07
- Mob to (b)(6)
- 10:29 - stop pick up AAS-08
- 10:52 - stop pick up IAS-08 & FD-06
- 11:11 - stop pick up AAS-09 - Ambient #2
- 11:57 - stop pick up AAS-10 - Ambient #1
- 12:10 - stop pick up IAS-10
- 12:20 - leave for lunch
- 13:35 - arrive (b)(6) (upper house)
- 14:10 - stop pick up IAS-11 ED-07
- 14:17 - stop pick up CRS-11 & FD-07 (lower)
- Mob to (b)(6)
- house

Location Asheville, NC Date 6/25/14
 Project / Client CTS of Asheville, Inc.
6252120006 M. Wallace / Amer page 2 of 2

14:42 - stop / pickup AAS-12

14:52 - stop / pickup IAS-12

- mob to (b)(6)

15:38 - stop / pickup AAS-13 and FD-DB

15:50 - stop / pickup CAS-13

16:05 - stop / pickup IAS-13

- mob to

16:47 - stop / pickup AAS-14

17:05 - left site to office -

- pack canisters, place custody seals,

deliver 6 boxes of canisters to

Pittman Ave FedEx at 18:30

M. Wallace 6/25/14

Location _____ Date _____
 Project / Client _____

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.Project Number: 6252-12-0006.03Sampling Personnel: MEW, WKWSample ID: AAS-07

(b)(6)

Sample Location: Ambient airCanister ID: AS00708Flow Controller ID: FCA00689Gauge ID: AVG03321Intake Height (ft): 4.2

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>
Sample Time:	<u>09:27</u>	<u>09:27</u>
Canister Pressure*:	<u>27.7" Hg</u>	<u>6.0" Hg</u>
Outdoor Temperature*:	<u>67°F</u>	<u>67°F</u>
Interior Temperature*:	<u>-</u>	<u>-</u>
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>
Wind Direction:	<u>slight to N</u>	<u>none</u>

Digital
Gauge DVG00015

29.5" Hg

6.5" Hg

Analog Gauge

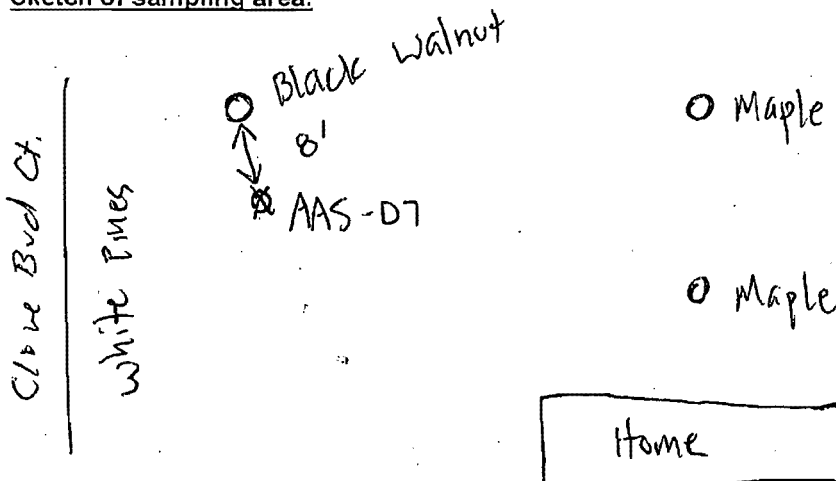
Antecedent weather conditions:

High temps during day in upper 70's °F; lows in 60's °F; clear with
maybe rain - shower - see weather record from Asheville airport.

Weather conditions during sample period:

70°F temps during day with periods of rain and sun. 60°F temps
at night. Clear during pickup. see weather record from Asheville
airport.

Sketch of sampling area:



* Indicate unit of measurement.

NTS

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEW / W'CW

Sample ID: CAS-07

Sample Location: Crawlspace

Canister ID: ACO 1839

Flow Controller ID: FCA00428

Gauge ID: AVG 03350

Intake Height (ft): 1.7'

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>

	Start	Stop
Sample Time:	<u>09:43</u>	<u>09:43</u>

	Start	Stop
Canister Pressure*:	<u>27.7" Hg</u>	<u>6.7" Hg</u> Digital Gauge DVG 00175

	Start	Stop
Outdoor Temperature*:	<u>67°F</u>	<u>67°F</u>

	Start	Stop
Interior Temperature*:	<u>70°F</u>	<u>66°F</u>

	Start	Stop
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>

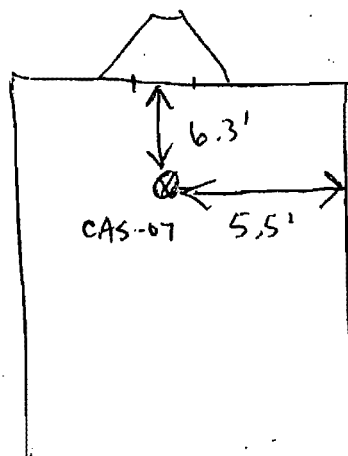
	Start	Stop
Wind Direction:	<u>Slight to N</u> <u>to none</u>	<u>NE very slight</u>

Antecedent weather conditions: 27.5" Hg 6.0" Hg Analog Gauge
see AAS-07

Weather conditions during sample period:

see AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

Address: Removal
 Information Redacted pursuant to
 Section 552 (b)(6), Personal Privacy Act

(b)(6)

Address Redacted

AIR SAMPLING FIELD DATA RECORD
Information Redacted pursuant to 5 U.S.C. Section 552 (b)(7)(D) Personal Privacy

Project Name: CTS of Asheville, Inc. Project Number: 6252-12-0006.03

Sampling Personnel: MEW / WLEW Sample ID: IAS-07

(b)(6) Sample Location: Indoor Air

Canister ID: A300718 Flow Controller ID: FCA00791

Gauge ID: AVG03634 Intake Height (ft): 2.9'

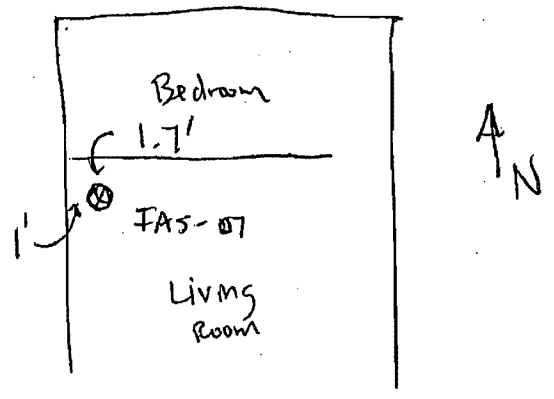
	<u>Start</u>	<u>Stop</u>
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>
Sample Time:	<u>10:00</u>	<u>10:00</u>
Canister Pressure*:	<u>27.7" Hg</u> 30 (over) <u>27.7" Hg</u> <u>6/24/14</u>	<u>28.7" Hg</u>
Outdoor Temperature*:	<u>67°F</u>	<u>67°F</u>
Interior Temperature*:	<u>73°F</u>	<u>72°F</u>
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>
Wind Direction:	<u>None / slight to N</u>	<u>slight NE</u>
	<u>28.5" Hg</u>	<u>9.0" Hg</u> Analog Gauge

Digital Gauge DVG 0015

Antecedent weather conditions:
See AAS-07

Weather conditions during sample period:
See AAS-07

Sketch of sampling area:



AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MCW / WKW

Sample ID: AAS-008 MB 06/24/14

(b)(6)

Sample Location: Ambient Air

Canister ID: AC07015

Flow Controller ID: FLA00743

Gauge ID: AVG03310

Intake Height (ft): 4.5

Address Provided
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>
Sample Time:	<u>10:29</u>	<u>10:29</u>
Canister Pressure*:	<u>27.7" Hg</u>	<u>7.1" Hg</u> 6/25/14
Outdoor Temperature*:	<u>60°F</u>	<u>67°F</u>
Interior Temperature*:	<u>—</u>	<u>—</u>
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>
Wind Direction:	<u>NE</u> <u>29.0" Hg</u>	<u>NE light</u> <u>7.0" Hg</u>

Digital Gauge DVG00175

Analog Gauge

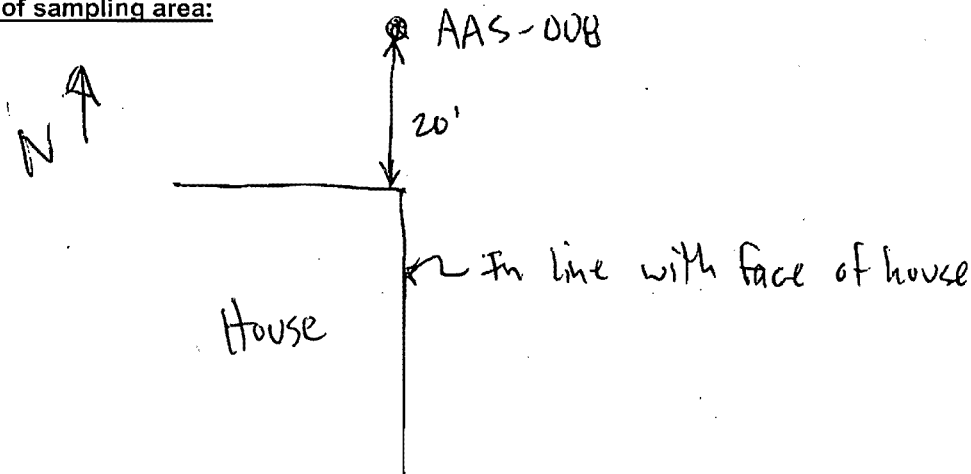
Antecedent weather conditions:

See AAS-07

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NT3

Address Removed

AIR SAMPLING FIELD DATA RECORD
Information Redacted pursuant to 5 U.S.C. Section 552(b)(7)(D) Personal Privacy

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006 03

Sampling Personnel: Mew / Wlaw

Sample ID: IAS-008

(b)(6)

Sample Location: Indoor Air

Canister ID: AS00715

Flow Controller ID: FCA00663

Gauge ID: AUG03696

Intake Height (ft): 2.8'

Dup Canister: AS00703
FD-06

Dup Init. Pressure: 27.7" Hg
Stop Dup Final pressure: 18.8" Hg

Sample Date: 6/24/14

6/25/14

Sample Time: 10:52

10:52

Canister Pressure*: 27.6" Hg

18.8" Hg Digital DVG00175

Outdoor Temperature*: 68°F

67°F

Interior Temperature*: 74°F

75°F

PID Reading (ppm): 0.3-0.4

0.0

Wind Direction: NE slight
29.0" Hg

NE slight / none
20" Hg Analog Gauge

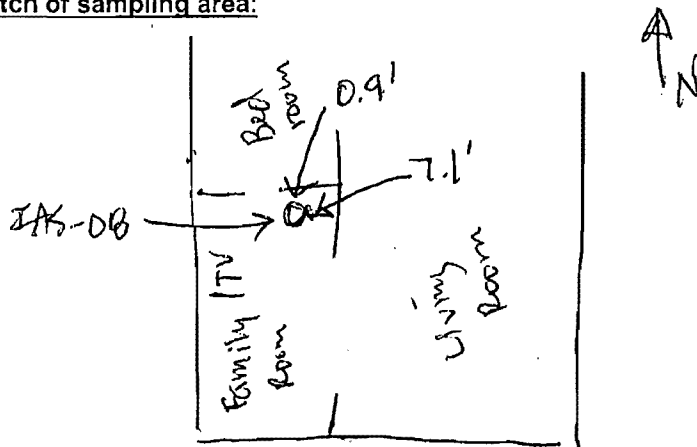
Antecedent weather conditions:

See AAS-07

Weather conditions during sample period:

see AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NT3

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEV / WKW

Sample ID: AAS-09

(b)(6)

Sample Location: (southern portion of property)
Ambient Air #2

Canister ID: AS00598

Flow Controller ID: FC A00005

Gauge ID: AVG 03347

Intake Height (ft): 4.2'

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>

	Start	Stop
Sample Time:	<u>11:11</u>	<u>11:11</u>

	Start	Stop
Canister Pressure*:	<u>27.7" Hg</u>	<u>7.0" Hg</u>

	Start	Stop
Outdoor Temperature*:	<u>72°F</u>	<u>68°F</u>

	Start	Stop
Interior Temperature*:	<u>—</u>	<u>—</u>

	Start	Stop
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>

	Start	Stop
Wind Direction:	<u>N slight</u>	<u>E slight</u>
	<u>27.0" Hg</u>	<u>7.5" Hg</u>

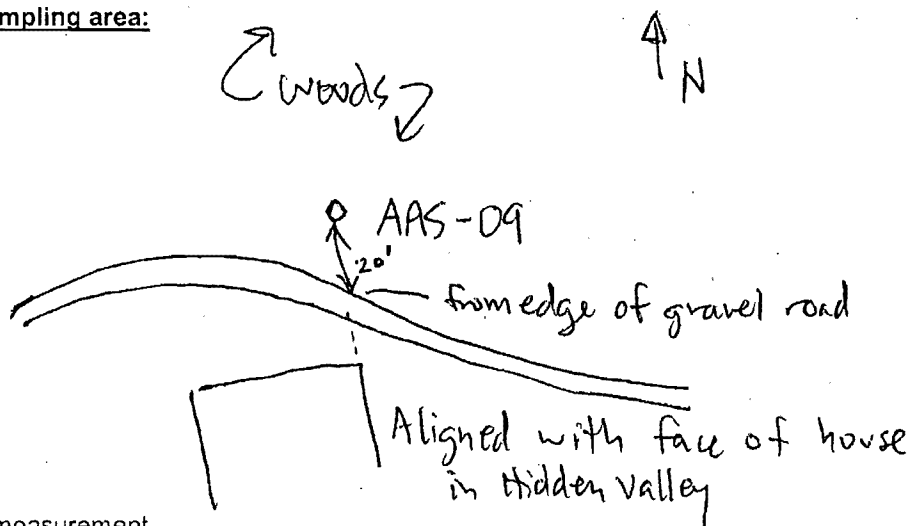
Antecedent weather conditions:

See AAS-07

Weather conditions during sample period:

see AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

Address removed

Information Redacted pursuant to 5 U.S.C. Section 552 (b)(6), Personal Privacy

~~Address removed~~

AIR SAMPLING FIELD DATA RECORD
Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MDU / WNW

Sample ID: AAS-10

(b)(6)

Sample Location: Ambrant am #1

Canister ID: AS 00705

Flow Controller ID: FLA 00034

Gauge ID: AVG 03551

Intake Height (ft): 4.6'

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>

Sample Time:	<u>11:57</u>	<u>11:57</u>
--------------	--------------	--------------

Canister Pressure*:	<u>27.7" Hg</u>	<u>14.6" Hg</u> Digital PVG 00175
---------------------	-----------------	-----------------------------------

Outdoor Temperature*:	<u>72°F</u>	<u>72°F</u>
-----------------------	-------------	-------------

Interior Temperature*:	<u>—</u>	<u>—</u>
------------------------	----------	----------

PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>
--------------------	------------	------------

Wind Direction:	<u>NE-light</u>	<u>E-light</u>
-----------------	-----------------	----------------

>30" Hg

14.5" Hg Analog Gauge

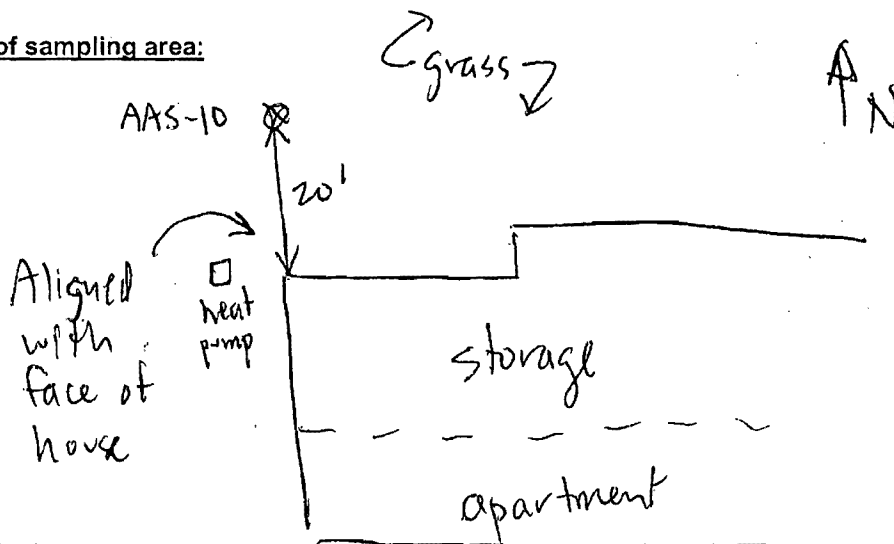
Antecedent weather conditions:

See AAS-07

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MAU / WKW

Sample ID: IAS-10

(b)(6)

Sample Location: Indoor Air

Canister ID: IAS 00221

Flow Controller ID: FCA 00168

Gauge ID: AVG 03821

Intake Height (ft): 2.9'

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>
Sample Time:	<u>12:10</u>	<u>12:10</u>

Canister Pressure*:	<u>27.8" Hg</u>	<u>6.7" Hg</u> Digital PVG 00175
---------------------	-----------------	----------------------------------

Outdoor Temperature*:	<u>72°F</u>	<u>74°F</u>
-----------------------	-------------	-------------

Interior Temperature*:	<u>74°F</u>	<u>73°F</u>
------------------------	-------------	-------------

PID Reading (ppm):	<u>0.4-0.5</u>	<u>0.0</u>
--------------------	----------------	------------

Wind Direction:	<u>still</u> <u>29.0" Hg</u>	<u>SE - moderate</u> <u>9.0" Hg</u> Analog Gauge
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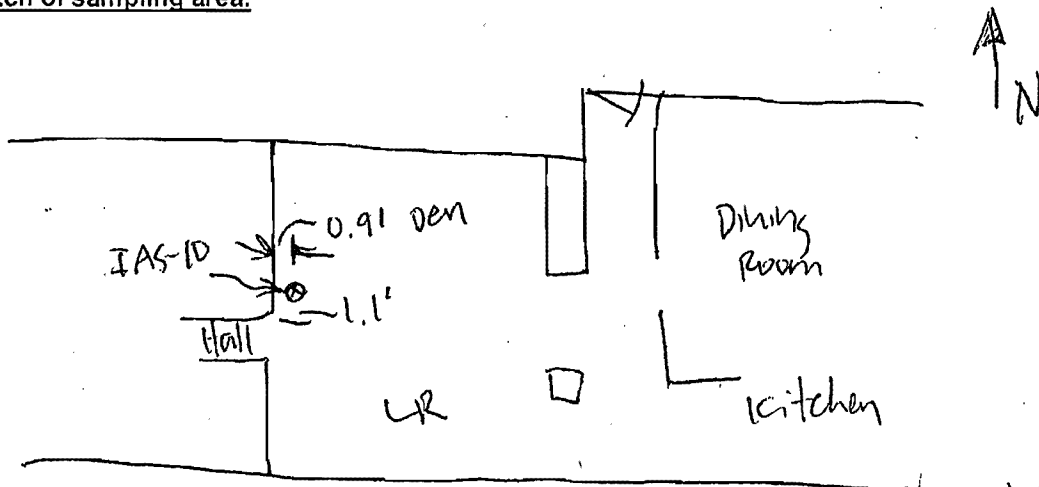
Antecedent weather conditions:

See AAS-07

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

Address Redacted pursuant to Section 552 (b)(6), Personal Information

Address Removed

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEU / WKW

Sample ID: FAS - 11

(b)(6)

Sample Location: Indoor

Canister ID: AS00704

Flow Controller ID: FCA00257

Gauge ID: AG03045

Intake Height (ft): 2.9'

	<u>Start</u>	<u>Stop</u>	
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>	
Sample Time:	<u>14:10</u>	<u>14:10</u>	
Canister Pressure*:	<u>27.7" Hg</u>	<u>6.7</u>	Digital PV900175
Outdoor Temperature*:	<u>72°F</u>	<u>69°F</u>	
Interior Temperature*:	<u>75°F</u>	<u>65°F</u>	
PID Reading (ppm):	<u>1.9</u>	<u>0.0</u>	
Wind Direction:	<u>None / rain</u>	<u>East moderate</u>	
	<u>29.0" Hg</u>	<u>7.0</u>	Analog Gauge

Antecedent weather conditions:

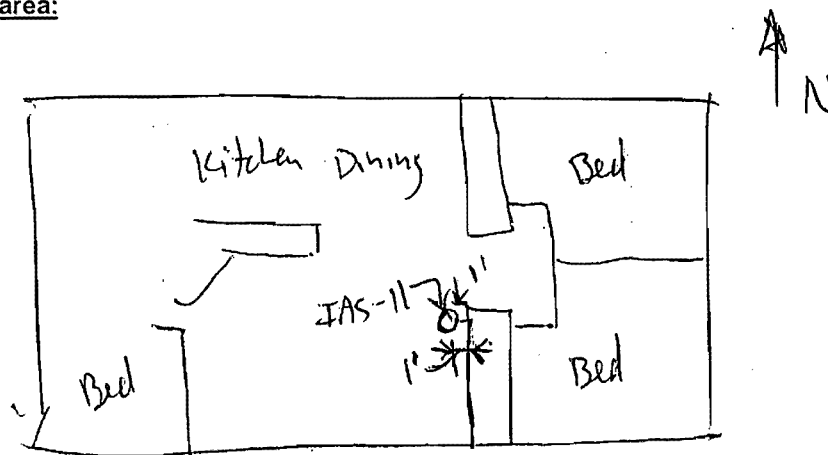
See AAS-07. Rain started during deployment

Weather conditions during sample period:

See AAS-07.

Sketch of sampling area:

Note: Recently
laundered towels
on dining room
table at time
of deployment.
Fabric softener(?)
odor noted



* Indicate unit of measurement.

NTS

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEW/WLW

Sample ID: CAS-11

U.S.C. by
Information Redacted pursuant to
Section 552 (b)(6), Personal Privacy

(b)(6)

Sample Location: Crawlspace

Canister ID: AS001601

Flow Controller ID: FLA00582

Gauge ID: AV603689

Intake Height (ft): 1.2'

Duplicate Canister AS00709
FD-07

Digital pressure 27.6" Hg
Start Stop Final pressure 13.8" Hg

Sample Date: 6/24/14

6/25/14

Sample Time: 14:17

14:17

Canister Pressure*: 27.7" Hg

13.9" Hg Digital DV600175

Outdoor Temperature*: 72°F

69°F

Interior Temperature*: 67°F

58°F

PID Reading (ppm): 0.2

0.0

Wind Direction: None

East moderate

Antecedent weather conditions: 30.0" Hg

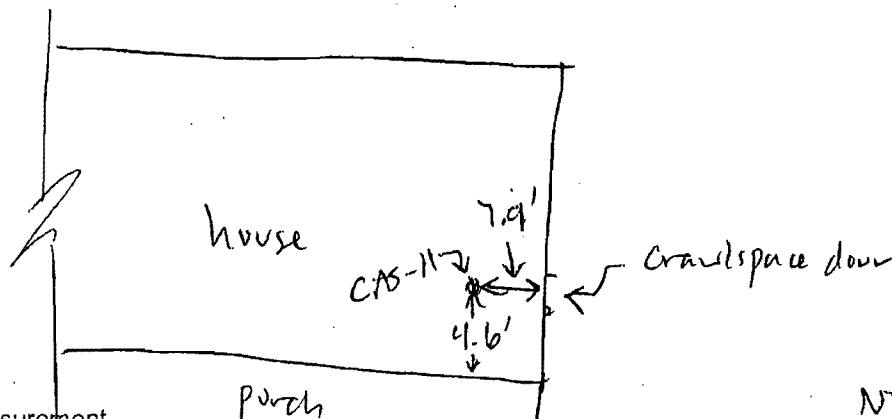
15" Hg Analog Gauge

See AAS-07. Rain during deployment

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

Address Removed

AIR SAMPLING FIELD DATA RECORD
Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEU / WKW
(lower house)

Sample ID: AAS-12

(b)(6)

Sample Location: Ambient Air

Canister ID: AS 00600

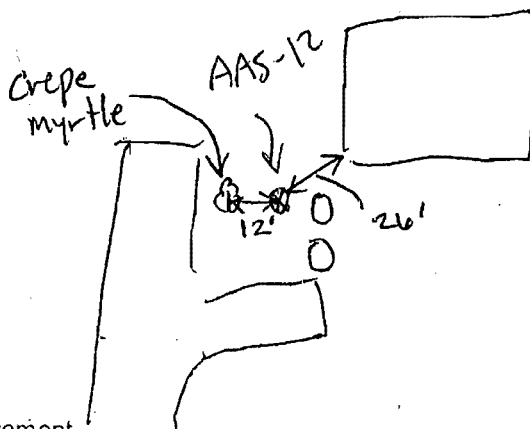
Flow Controller ID: FCA 00764

Gauge ID: AVG 03480

Intake Height (ft): 4.9

	Start	Stop
Sample Date:	6/24/14	6/25/14
Sample Time:	14142	14142
Canister Pressure*:	27.7" Hg	6.9" Hg Digital DVG 00175
Outdoor Temperature*:	66°F	72°F
Interior Temperature*:	—	—
PID Reading (ppm):	0.0	0.0
Wind Direction:	None/rain 29.0" Hg	East light/moderate 7.5" Hg Analog Gauge
Antecedent weather conditions:	See AAS-07 - rain at deployment	
Weather conditions during sample period:	See AAS-07	

Sketch of sampling area:



* Indicate unit of measurement.

NT3

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MAW / WKL

Sample ID: IAS-12

(leave home)

Sample Location: Indoor Air

Canister ID: AC00527

Flow Controller ID: FLA00643

Gauge ID: ANG03760

Intake Height (ft): 2.9' kitchen floor
3.8' living room floor

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>
Sample Time:	<u>14:52</u>	<u>14:52</u>
Canister Pressure*:	<u>27.6" Hg</u>	<u>5.1" Hg</u> Digital DV400175
Outdoor Temperature*:	<u>66°F</u>	<u>72°F</u>
Interior Temperature*:	<u>73°F</u>	<u>68°F</u>
PID Reading (ppm):	<u>0.1</u>	<u>0.0</u>
Wind Direction:	<u>None</u>	<u>East light/moderate</u>
	<u>29.5" Hg</u>	<u>5.5" Hg</u> Analog Gauge

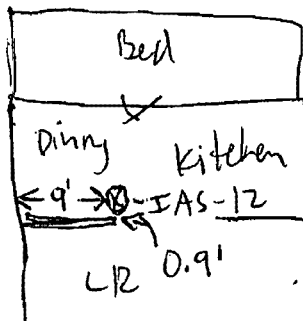
Antecedent weather conditions:

See AAS-07. Recent rain

Weather conditions during sample period:

See AAS-07.

Sketch of sampling area:



A
N

* Indicate unit of measurement.

NT3

Address Person
 Information Redacted pursuant to
 5 U.S.C.
 Section 552 (b)(6), Personal Information

(b)(6)

Address Removed

AIR SAMPLING FIELD DATA ~~RECORD~~ Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEU / WNW

Sample ID: AAS-13

(b)(6)

Canister ID: AS00463

Flow Controller ID: FCA00249

Gauge ID: AVG 03771

Intake Height (ft): 4.7

Duplicate Canister AS00712
FD-08 Start

Init Pressure 27.7" Hg
Stop Final Pressure 12.6" Hg

Sample Date: 6/24/14

6/25/14

Sample Time: 15:38

15:38

Canister Pressure*: 27.6" Hg

12.6" Hg Digital DV400175

Outdoor Temperature*: 76°F

75°F

Interior Temperature*: —

—

PID Reading (ppm): 0.0

0.0

Wind Direction: None

E-slight (bust to west)

28.0" Hg

12.0" Hg Analog Gauge

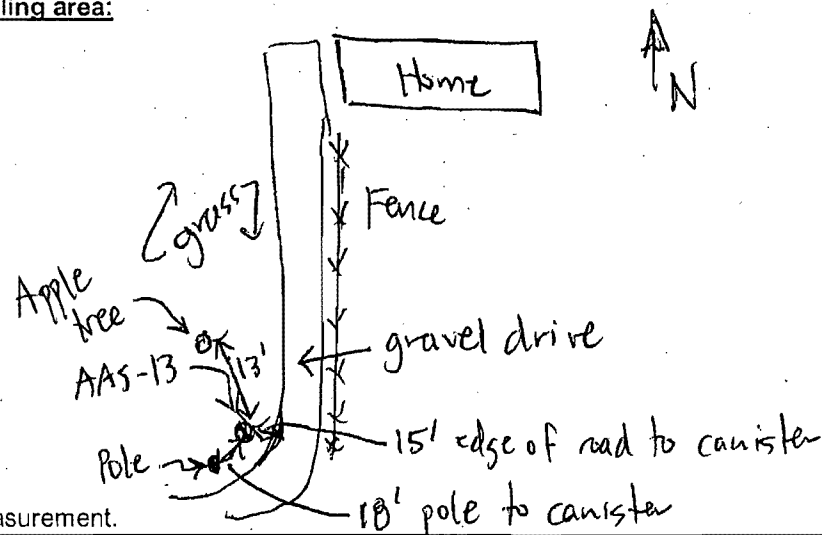
Antecedent weather conditions:

See AAS-07. Recent rain

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEN/WLW

Sample ID: CAS-13

Sample Location: Crawlspace

Flow Controller ID: FCA 00933

Intake Height (ft): 1.8'

Canister ID: AC00840

Gauge ID: AVG 03416

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>

	Start	Stop
Sample Time:	<u>15:50</u>	<u>15:50</u>

	Start	Stop
Canister Pressure*:	<u>27.7" Hg</u>	<u>5.6</u> Digital DNG 00175

	Start	Stop
Outdoor Temperature*:	<u>76°F</u>	<u>77°F</u>

	Start	Stop
Interior Temperature*:	<u>68°F</u>	<u>62°F</u>

	Start	Stop
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>

	Start	Stop
Wind Direction:	<u>None (Rain)</u>	<u>East Light</u>

28.5" Hg 5.5" Hg Analog Gauge

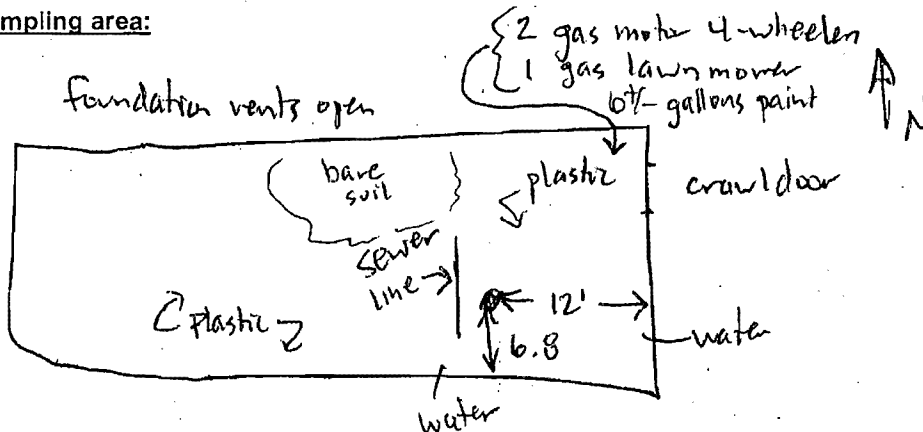
Antecedent weather conditions:

See AAS-07. Rain at deployment

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

Address Removed
 Information Redacted pursuant
 Section 552 (b)(6), Personal P

Address Removed

Information Redacted pursuant to 5 U.S.C. 552 (b)(6), Personal Privacy

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEW / WW

Sample ID: IAS-13

(b)(6)

Sample Location: Indoor Air

Canister ID: AC 01326

Flow Controller ID: FCA 00311

Gauge ID: AVG 03843

Intake Height (ft): 2.8'

	Start	Stop
Sample Date:	6/24/14	6/25/14
Sample Time:	16:05	16:05
Canister Pressure*:	27.7" Hg	6.6" Hg
Outdoor Temperature*:	76°F	77°F
Interior Temperature*:	77°F	75°F
PID Reading (ppm):	0.0	0.0
Wind Direction:	None	East light
	>30" Hg	9.0" Hg

Digital OVG 00175

Analog Gauge

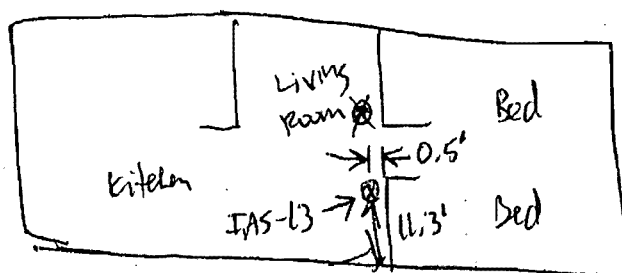
Antecedent weather conditions:

See AAS-07. Recent rain.

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

AIR SAMPLING FIELD DATA RECORD

Project Name: CTS of Asheville, Inc.

Project Number: 6252-12-0006.03

Sampling Personnel: MEU / WKW

Sample ID: AAS-14

Sample Location: Ambient Air

Canister ID: AS 0011

Flow Controller ID: FCA 00124

Gauge ID: AVG 03908

Intake Height (ft): 4.8

	Start	Stop
Sample Date:	<u>6/24/14</u>	<u>6/25/14</u>

	Start	Stop
Sample Time:	<u>16:47</u>	<u>16:47</u>

	Start	Stop
Canister Pressure*:	<u>27.8" Hg</u>	<u>4.0" Hg</u> Digital DVG 00175

	Start	Stop
Outdoor Temperature*:	<u>77°F</u>	<u>76°F</u>

	Start	Stop
Interior Temperature*:	<u>—</u>	<u>—</u>

	Start	Stop
PID Reading (ppm):	<u>0.0</u>	<u>0.0</u>

	Start	Stop
Wind Direction:	<u>None (clear)</u>	<u>East-Light</u>

	Start	Stop
	<u>29.5" Hg</u>	<u>5.0" Hg</u> Analog Gauge

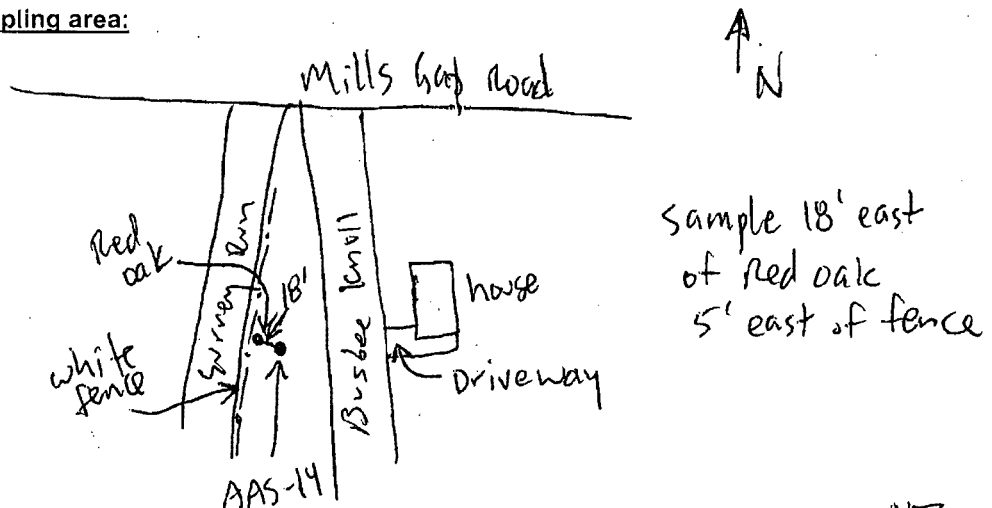
Antecedent weather conditions:

See AAS-07. Recent rain

Weather conditions during sample period:

See AAS-07

Sketch of sampling area:



* Indicate unit of measurement.

NTS

(b)(6)

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Information Redacted pursuant to
Section 552 (b)(6), Personal Privacy



APPENDIX E

LABORATORY INDIVIDUAL CERTIFICATION DOCUMENTS



Individual Summa Canister and Combination Summa Canister/Flow Controller QC Check

Client: AMEC Environment & Infrastructure
Method: TO-15
Instrument: Tekmar AUTOCAN/Agilent 5975Cinert/7890A/MS19
Analyte List: See below
MRL: 0.025ug/m3
Media Request: 50214

<u>Canister</u>	<u>Flow Controller</u>	<u>Analog Gauge</u>	<u>Date Analyzed</u>	<u>sum qc</u>
AC00824	FCA00667	AVG03603	6/17/14	PASS
AS00709	FCA00473	AVG03234	6/17/14	PASS
AS00711	FCA00124	AVG03908	6/17/14	PASS
AS00708	FCA00689	AVG03321	6/17/14	PASS
AC01326	FCA00933	AVG03416	6/17/14	PASS

Analytes: VC,cis&trans-1,2-DCE,TCE

me 6/20/14



Individual Summa Canister and Combination Summa Canister/Flow Controller QC Check

Client: AMEC Environment & Infrastructure
Method: TO-15
Instrument: Tekmar AUTOCAN/Agilent 5975Cinert/7890A/MS19
Analyte List: See below
MRL: 0.025ug/m3
Media Request: 50214

<u>Canister</u>	<u>Flow Controller</u>	<u>Analog Gauge</u>	<u>Date Analyzed</u>	<u>sim qc</u>
AS00221	FCA00168	AVG03821	6/16/14	PASS
AC00527	FCA00643	AVG03760	6/16/14	PASS
AS00716	FCA00238	AVG03612	6/16/14	PASS
AC01839	FCA00428	AVG03350	6/16/14	PASS
AS00463	FCA00249	AVG03771	6/16/14	PASS
AS00713	FCA00791	AVG03634	6/16/14	PASS
AS00705	FCA00034	AVG03551	6/16/14	PASS
AC00840	FCA00311	AVG03843	6/16/14	PASS
AS00712	FCA00047	AVG03556	6/16/14	PASS
AC02015	FCA00743	AVG03310	6/16/14	PASS
AS00161	FCA00582	AVG03689	6/16/14	PASS

Analytes: VC,cis&trans-1,2-DCE,TCE

me 6/20/14



Individual Summa Canister and Combination Summa Canister/Flow Controller QC Check

Client: AMEC Environment & Infrastructure
Method: TO-15
Instrument: Tekmar AUTOCAN/Agilent 5975Cinert/7890A/MS19
Analyte List: See below
MRL: 0.025ug/m3
Media Request: 50214

<u>Canister</u>	<u>Flow Controller</u>	<u>Analog Gauge</u>	<u>Date Analyzed</u>	<u>sim qc</u>
AS00703	FCA00663	AVG03696	6/13/14	PASS
AS00714			6/13/14	PASS
AS00598	FCA00005	AVG03347	6/13/14	PASS
AS00715	FCA00928	AVG03831	6/13/14	PASS
AS00718	FCA00429	AVG03612	6/13/14	PASS
AS00704	FCA00257	AVG03045	6/13/14	PASS
AS00600	FCA00764	AVG03480	6/13/14	PASS

Analytes: VC,cis&trans-1,2-DCE,TCE

mc 6/20/14



Individual Summa Canister QC Check

Client: AMEC Environment & Infrastructure
Method: TO-15
Instrument: Tekmar AUTOCAN/Agilent 5975Cinert/7890A/MS19
Analyte List: See below
MRL: 0.025ug/m3
Media Request: 50214

<u>Canister</u>	<u>Analog Gauge</u>	<u>Date Analyzed</u>	<u>sim qc</u>
	DVG00121	6/20/14	PASS
	DVG00175	6/20/14	PASS

Analytes: VC,cis&trans-1,2-DCE,TCE

6/20/14 me



APPENDIX F

LABORATORY ANALYTICAL REPORT



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
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www.alsglobal.com

LABORATORY REPORT

August 12, 2014

Susan Kelly
AMEC Environment & Infrastructure, Inc.
1308 Patton Ave
Asheville, NC 28806-2604

RE: CTS of Asheville / 6252-12-0006.0003

Dear Susan:

A summary report has been generated per client request. Enclosed are the results of the samples submitted to our laboratory on June 26, 2014. For your reference, these analyses have been assigned our service request number P1402574.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kate Aguilera at 10:01 am, Aug 12, 2014

Kate Aguilera
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER



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F: +1 805 526 7270
www.alsglobal.com

Client: AMEC Environment & Infrastructure, Inc.
Project: CTS of Asheville / 6252-12-0006.0003

Service Request No: P1402574

CASE NARRATIVE

The samples were received intact under chain of custody on June 26, 2014 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed in SIM mode for selected volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is not included on the laboratory's AIHA-LAP scope of accreditation.

The Summa canisters were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



2655 Park Center Dr., Suite A
 Simi Valley, CA 93065
 T: +1 805 526 7161
 F: +1 805 526 7270
www.alsglobal.com

ALS Environmental – Simi Valley
 Certifications, Accreditations, and Registrations

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjilabs.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2012039
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	643428
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA01627201 3-3
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: AMEC Environment & Infrastructure, Inc.
Project ID: CTS of Asheville / 6252-12-0006.0003

Service Request: P1402574

Date Received: 6/26/2014
Time Received: 09:45

TO-15 - VOC SIM

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	P11 (psig)	P11 (psig)	
TB-03	P1402574-001	Air	6/25/2014	00:00	AS00714	14.17	3.56	X
FD-06	P1402574-002	Air	6/25/2014	00:00	AS00703	-9.91	3.51	X
FD-07	P1402574-003	Air	6/25/2014	00:00	AS00709	-7.41	3.52	X
FD-08	P1402574-004	Air	6/25/2014	00:00	AS00712	-7.07	3.51	X
AAS-07	P1402574-005	Air	6/25/2014	09:27	AS00708	-3.48	3.61	X
CAS-07	P1402574-006	Air	6/25/2014	09:43	AC01839	-3.95	3.66	X
AAS-08	P1402574-008	Air	6/25/2014	10:29	AC02015	-4.17	3.59	X
IAS-08	P1402574-009	Air	6/25/2014	10:52	AS00715	-9.90	3.52	X
AAS-09	P1402574-010	Air	6/25/2014	11:11	AS00598	-4.19	3.59	X
AAS-10	P1402574-011	Air	6/25/2014	11:57	AS00705	-7.94	3.54	X
IAS-10	P1402574-012	Air	6/25/2014	12:10	AS00221	-4.11	3.53	X
CAS-11	P1402574-014	Air	6/25/2014	14:17	AS00161	-7.42	3.56	X
AAS-12	P1402574-015	Air	6/25/2014	14:42	AS00600	-4.59	3.50	X
IAS-12	P1402574-016	Air	6/25/2014	14:52	AC00527	-3.31	3.72	X
AAS-13	P1402574-017	Air	6/25/2014	15:38	AS00463	-7.08	3.70	X
CAS-13	P1402574-018	Air	6/25/2014	15:50	AC00840	-3.45	3.60	X
AAS-14	P1402574-020	Air	6/25/2014	16:47	AS00711	-2.83	3.60	X



Air - Chain of Custody Record & Analytical Service Request

Page 1 of 2

2655 Park Center Drive, Suite A
Simi Valley, California 93085
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No P1402514

Company Name & Address (Reporting Information) AMEC Environment & Infrastructure, Inc. 1308-C Patton Ave. Asheville NC 28806				Project Name CTS of Asheville, Inc.				ALS Contact: K. Aguilera		TD-15 SIM - site specific list see PM	Comments e.g. Actual Preservative or specific instructions				
Project Manager Matthew Wallace				Project Number 6252-12-0006-0003				Analysis Method							
Phone 828-252-8130				P.O. # / Billing Information send invoice to matthew.wallace@amec.com											
Email Address for Result Reporting matthew.wallace@amec.com				Sampler (Print & Sign) Matthew E. Wallace Matthew E. Wallace											
Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume							
① TB-03		Lab Prep		AS00714	NA	NA	NA	NA	X		-12.28				
② FD-06		6/25/14	—	AS00703	—	27.7	18.8		X		-9.33				
③ FD-07		6/25/14	—	AS00709	—	27.6	13.8		X		-7.17				
④ FD-08		6/25/14	—	AS00712	—	27.7	12.6		X		-6.77				
⑤ AAS-07		6/25/14	09:27	AS00708	FLA00689	27.7	6.0		X		-7.30				
⑥ CAS-07		6/25/14	09:43	AL01839	FLA00428	27.7	6.7		X		-7.77				
⑦ IAS-07		6/25/14	10:00	AS00718	FLA00791	27.7	8.7		X		-4.77				
⑧ AAS-08		6/25/14	10:29	AL02015	FLA00743	27.7	7.1		X		-7.94				
⑨ IAS-08		6/25/14	10:52	AS00715	FLA00663	27.6	18.8		X		-9.26				
⑩ AAS-09		6/25/14	11:11	AS00598	FLA00005	27.7	7.0		X		-4.09				
⑪ AAS-10		6/25/14	11:57	AS00705	FLA00037	27.7	14.6		X		-7.84				
⑫ IAS-10		6/25/14	12:10	AS00221	FLA00168	27.8	6.7		X		-4.04				
⑬ IAS-11		6/25/14	14:10	AS00704	FLA00257	27.7	6.7	✓	X		-4.25				
⑭ CAS-11		6/25/14	14:17	AS00161	FLA00582	27.7	13.9	NA	X		-7.30				
Report Tier Levels - please select															
Tier I - Results (Default in not specified) _____				Tier III (Results + QC & Calibration Summaries) _____				Tier II (Results + QC Summaries) _____				Tier IV (Date Validation Package) 10% Surcharge _____			
Relinquished by: (Signature) Matthew Wallace				Date: 6/25/14 Time: 18:30				Received by: (Signature) FEDEX - Patton Ave, Asheville				Date: 6/26/14 Time: 0945			
Relinquished by: (Signature) _____				Date: _____ Time: _____				Received by: (Signature) K. Aguilera				Date: 6/26/14 Time: 0945			
Project Requirements (MRLs, QAPP) Project QAPP															
Cooler / Blank Temperature _____ °C															

Page 2 of 2

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Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No P1402574

[illegible]

**ALS Environmental
Sample Acceptance Check Form**

Client: AMEC Environment & Infrastructure, Inc.

Work order: P1402574

Project: CTS of Asheville - Indoor Air / 6252-12-0006.0003

Sample(s) received on: 6/26/14

Date opened: 6/26/14

by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

	Yes	No	N/A
1 Were sample containers properly marked with client sample ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Container(s) supplied by ALS ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Did sample containers arrive in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Were chain-of-custody papers used and filled out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Did sample container labels and/or tags agree with custody papers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Was sample volume received adequate for analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Are samples within specified holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Was proper temperature (thermal preservation) of cooler at receipt adhered to?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9 Was a trip blank received?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Were custody seals on outside of cooler/Box?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Location of seal(s)? <u>sealing lid</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were signature and date included?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were seals intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were custody seals on outside of sample container?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Location of seal(s)? _____	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were signature and date included?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11 Do containers have appropriate preservation , according to method/SOP or Client specified information?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there a client indication that the submitted samples are pH preserved?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were VOA vials checked for presence/absence of air bubbles?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12 Tubes: Are the tubes capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Do they contain moisture?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13 Badges: Are the badges properly capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are dual bed badges separated and individually capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1402574-001.01	6.0 L Silonite Can					
P1402574-002.01	6.0 L Silonite Can					
P1402574-003.01	6.0 L Silonite Can					
P1402574-004.01	6.0 L Silonite Can					
P1402574-005.01	6.0 L Silonite Can					
P1402574-006.01	6.0 L Ambient Can					
P1402574-007.01	6.0 L Ambient Can					
P1402574-008.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers): _____

Chain of Custody is missing TAT

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: TB-03

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-001

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00714

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	0.0074	0.025	0.0068	0.0029	0.0098	0.0027	J
156-60-5	trans-1,2-Dichloroethene	ND	0.025	0.0064	ND	0.0063	0.0016	
156-59-2	cis-1,2-Dichloroethene	ND	0.025	0.0061	ND	0.0063	0.0015	
79-01-6	Trichloroethene	ND	0.025	0.0072	ND	0.0047	0.0013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: FD-06

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-002

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00703

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -9.91 Final Pressure (psig): 3.51

Canister Dilution Factor: 3.80

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.095	0.026	ND	0.037	0.010	
156-60-5	trans-1,2-Dichloroethene	ND	0.095	0.024	ND	0.024	0.0061	
156-59-2	cis-1,2-Dichloroethene	0.058	0.095	0.023	0.015	0.024	0.0058	J
79-01-6	Trichloroethene	0.21	0.095	0.027	0.039	0.018	0.0051	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: FD-07

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-003

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00709

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -7.41 Final Pressure (psig): 3.52

Canister Dilution Factor: 2.50

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.063	0.017	ND	0.024	0.0067	
156-60-5	trans-1,2-Dichloroethene	ND	0.063	0.016	ND	0.016	0.0040	
156-59-2	cis-1,2-Dichloroethene	0.042	0.063	0.015	0.011	0.016	0.0038	J
79-01-6	Trichloroethene	0.16	0.063	0.018	0.030	0.012	0.0034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: FD-08

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-004

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00712

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -7.07 **Final Pressure (psig):** 3.51

Canister Dilution Factor: 2.39

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	0.048	0.12	0.033	0.019	0.047	0.013	J
156-60-5	trans-1,2-Dichloroethene	ND	0.12	0.031	ND	0.030	0.0077	
156-59-2	cis-1,2-Dichloroethene	0.15	0.12	0.029	0.038	0.030	0.0074	
79-01-6	Trichloroethene	0.41	0.12	0.034	0.077	0.022	0.0064	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-07

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-005

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00708

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.48 Final Pressure (psig): 3.61

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.041	0.011	ND	0.016	0.0043	
156-60-5	trans-1,2-Dichloroethene	ND	0.041	0.010	ND	0.010	0.0026	
156-59-2	cis-1,2-Dichloroethene	0.18	0.041	0.0099	0.045	0.010	0.0025	
79-01-6	Trichloroethene	0.49	0.041	0.012	0.092	0.0076	0.0022	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: CAS-07

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-006

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister

Test Notes:

Container ID: AC01839

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.95 Final Pressure (psig): 3.66

Canister Dilution Factor: 1.71

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.043	0.012	ND	0.017	0.0046	
156-60-5	trans-1,2-Dichloroethene	ND	0.043	0.011	ND	0.011	0.0028	
156-59-2	cis-1,2-Dichloroethene	0.099	0.043	0.010	0.025	0.011	0.0026	
79-01-6	Trichloroethene	0.34	0.043	0.012	0.063	0.0080	0.0023	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-08

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-008

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister

Test Notes:

Container ID: AC02015

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -4.17 Final Pressure (psig): 3.59

Canister Dilution Factor: 1.74

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.044	0.012	ND	0.017	0.0046	
156-60-5	trans-1,2-Dichloroethene	ND	0.044	0.011	ND	0.011	0.0028	
156-59-2	cis-1,2-Dichloroethene	0.11	0.044	0.011	0.028	0.011	0.0027	
79-01-6	Trichloroethene	0.32	0.044	0.013	0.059	0.0081	0.0023	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: IAS-08

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-009

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00715

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -9.90 **Final Pressure (psig):** 3.52

Canister Dilution Factor: 3.80

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.095	0.026	ND	0.037	0.010	
156-60-5	trans-1,2-Dichloroethene	ND	0.095	0.024	ND	0.024	0.0061	
156-59-2	cis-1,2-Dichloroethene	0.060	0.095	0.023	0.015	0.024	0.0058	J
79-01-6	Trichloroethene	0.21	0.095	0.027	0.039	0.018	0.0051	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-09

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-010

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00598

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -4.19 Final Pressure (psig): 3.59

Canister Dilution Factor: 1.74

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.087	0.024	ND	0.034	0.0093	
156-60-5	trans-1,2-Dichloroethene	ND	0.087	0.022	ND	0.022	0.0056	
156-59-2	cis-1,2-Dichloroethene	0.10	0.087	0.021	0.025	0.022	0.0054	
79-01-6	Trichloroethene	0.30	0.087	0.025	0.056	0.016	0.0047	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-10

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-011

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00705

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -7.94 Final Pressure (psig): 3.54

Canister Dilution Factor: 2.70

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	0.13	0.14	0.037	0.050	0.053	0.014	J
156-60-5	trans-1,2-Dichloroethene	ND	0.14	0.035	ND	0.034	0.0087	
156-59-2	cis-1,2-Dichloroethene	0.25	0.14	0.033	0.063	0.034	0.0083	
79-01-6	Trichloroethene	0.74	0.14	0.039	0.14	0.025	0.0072	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: IAS-10

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-012

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00221

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -4.11 Final Pressure (psig): 3.53

Canister Dilution Factor: 1.72

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.043	0.012	ND	0.017	0.0046	
156-60-5	trans-1,2-Dichloroethene	ND	0.043	0.011	ND	0.011	0.0028	
156-59-2	cis-1,2-Dichloroethene	0.12	0.043	0.010	0.031	0.011	0.0026	
79-01-6	Trichloroethene	0.49	0.043	0.012	0.091	0.0080	0.0023	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: CAS-11

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-014

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00161

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -7.42 **Final Pressure (psig):** 3.56

Canister Dilution Factor: 2.51

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.063	0.017	ND	0.025	0.0067	
156-60-5	trans-1,2-Dichloroethene	ND	0.063	0.016	ND	0.016	0.0041	
156-59-2	cis-1,2-Dichloroethene	0.040	0.063	0.015	0.010	0.016	0.0039	J
79-01-6	Trichloroethene	0.16	0.063	0.018	0.031	0.012	0.0034	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-12

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-015

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00600

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -4.59 Final Pressure (psig): 3.50

Canister Dilution Factor: 1.80

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.090	0.024	ND	0.035	0.0096	
156-60-5	trans-1,2-Dichloroethene	ND	0.090	0.023	ND	0.023	0.0058	
156-59-2	cis-1,2-Dichloroethene	0.25	0.090	0.022	0.062	0.023	0.0055	
79-01-6	Trichloroethene	0.64	0.090	0.026	0.12	0.017	0.0048	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: IAS-12

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-016

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister

Test Notes:

Container ID: AC00527

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.31 Final Pressure (psig): 3.72

Canister Dilution Factor: 1.62

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.041	0.011	ND	0.016	0.0043	
156-60-5	trans-1,2-Dichloroethene	0.016	0.041	0.010	0.0040	0.010	0.0026	J
156-59-2	cis-1,2-Dichloroethene	0.17	0.041	0.0099	0.042	0.010	0.0025	
79-01-6	Trichloroethene	0.51	0.041	0.012	0.095	0.0075	0.0022	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-13

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-017

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00463

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -7.08 Final Pressure (psig): 3.70

Canister Dilution Factor: 2.41

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.12	0.033	ND	0.047	0.013	
156-60-5	trans-1,2-Dichloroethene	ND	0.12	0.031	ND	0.030	0.0078	
156-59-2	cis-1,2-Dichloroethene	0.14	0.12	0.029	0.036	0.030	0.0074	
79-01-6	Trichloroethene	0.42	0.12	0.035	0.079	0.022	0.0065	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: CAS-13

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-018

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Summa Canister

Test Notes:

Container ID: AC00840

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -3.45 Final Pressure (psig): 3.60

Canister Dilution Factor: 1.63

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.082	0.022	ND	0.032	0.0087	
156-60-5	trans-1,2-Dichloroethene	ND	0.082	0.021	ND	0.021	0.0053	
156-59-2	cis-1,2-Dichloroethene	0.078	0.082	0.020	0.020	0.021	0.0050	J
79-01-6	Trichloroethene	0.25	0.082	0.023	0.047	0.015	0.0044	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-14

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-020

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00711

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -2.83 Final Pressure (psig): 3.60

Canister Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	0.025	0.077	0.021	0.0096	0.030	0.0082	J
156-60-5	trans-1,2-Dichloroethene	0.024	0.077	0.020	0.0060	0.019	0.0050	J
156-59-2	cis-1,2-Dichloroethene	0.20	0.077	0.019	0.051	0.019	0.0047	
79-01-6	Trichloroethene	0.57	0.077	0.022	0.11	0.014	0.0041	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.
Client Sample ID: Method Blank
Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574
 ALS Sample ID: P140626-MB

Test Code: EPA TO-15 SIM
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19
Analyst: Wida Ang
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 6/26/14
Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.025	0.0068	ND	0.0098	0.0027	
156-60-5	trans-1,2-Dichloroethene	ND	0.025	0.0064	ND	0.0063	0.0016	
156-59-2	cis-1,2-Dichloroethene	ND	0.025	0.0061	ND	0.0063	0.0015	
79-01-6	Trichloroethene	ND	0.025	0.0072	ND	0.0047	0.0013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: Method Blank

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P140627-MB

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result $\mu\text{g}/\text{m}^3$	MRL $\mu\text{g}/\text{m}^3$	MDL $\mu\text{g}/\text{m}^3$	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.025	0.0068	ND	0.0098	0.0027	
156-60-5	trans-1,2-Dichloroethene	ND	0.025	0.0064	ND	0.0063	0.0016	
156-59-2	cis-1,2-Dichloroethene	ND	0.025	0.0061	ND	0.0063	0.0015	
79-01-6	Trichloroethene	ND	0.025	0.0072	ND	0.0047	0.0013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: Method Blank

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P140630-MB

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 6/30/14

Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	MDL µg/m³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.025	0.0068	ND	0.0098	0.0027	
156-60-5	trans-1,2-Dichloroethene	ND	0.025	0.0064	ND	0.0063	0.0016	
156-59-2	cis-1,2-Dichloroethene	ND	0.025	0.0061	ND	0.0063	0.0015	
79-01-6	Trichloroethene	ND	0.025	0.0072	ND	0.0047	0.0013	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.
Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Test Code: EPA TO-15 SIM
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19
Analyst: Wida Ang
Sample Type: 6.0 L Summa Canister(s)
Test Notes:

Date(s) Collected: 6/25/14
Date(s) Received: 6/26/14
Date(s) Analyzed: 6/30/14

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		% Recovered	% Recovered	% Recovered		
Method Blank	P140626-MB	99	97	93	70-130	
Method Blank	P140627-MB	98	103	90	70-130	
Method Blank	P140630-MB	99	101	91	70-130	
Lab Control Sample	P140626-LCS	103	94	102	70-130	
Lab Control Sample	P140627-LCS	103	96	106	70-130	
Lab Control Sample	P140630-LCS	104	99	99	70-130	
TB-03	P1402574-001	99	95	87	70-130	
FD-06	P1402574-002	99	98	97	70-130	
FD-07	P1402574-003	100	102	93	70-130	
FD-07	P1402574-003DUP	99	102	94	70-130	
FD-08	P1402574-004	101	99	93	70-130	
AAS-07	P1402574-005	99	98	93	70-130	
AAS-07	P1402574-005DUP	99	98	93	70-130	
CAS-07	P1402574-006	98	106	95	70-130	
IAS-07	P1402574-007	97	99	95	70-130	
AAS-08	P1402574-008	97	98	95	70-130	
IAS-08	P1402574-009	98	98	96	70-130	
AAS-09	P1402574-010	101	99	86	70-130	
AAS-10	P1402574-011	100	99	84	70-130	
IAS-10	P1402574-012	99	104	98	70-130	
CAS-11	P1402574-014	98	103	102	70-130	
AAS-12	P1402574-015	101	98	95	70-130	
IAS-12	P1402574-016	97	96	100	70-130	
AAS-13	P1402574-017	101	103	94	70-130	
CAS-13	P1402574-018	103	105	98	70-130	
AAS-14	P1402574-020	99	100	97	70-130	
AAS-14	P1402574-020DUP	99	100	97	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: Lab Control Sample

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P140626-LCS

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 6/26/14

Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
75-01-4	Vinyl Chloride	4.00	3.85	96	63-120	
156-60-5	trans-1,2-Dichloroethene	4.20	4.27	102	66-115	
156-59-2	cis-1,2-Dichloroethene	4.32	4.41	102	66-116	
79-01-6	Trichloroethene	4.12	4.08	99	66-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: Lab Control Sample

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P140627-LCS

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 6/27/14

Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS Acceptance Limits	Data Qualifier
75-01-4	Vinyl Chloride	4.00	3.81	95	63-120	
156-60-5	trans-1,2-Dichloroethene	4.20	3.94	94	66-115	
156-59-2	cis-1,2-Dichloroethene	4.32	4.01	93	66-116	
79-01-6	Trichloroethene	4.12	3.99	97	66-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: Lab Control Sample

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P140630-LCS

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
75-01-4	Vinyl Chloride	4.00	4.13	103	63-120	
156-60-5	trans-1,2-Dichloroethene	4.20	4.20	100	66-115	
156-59-2	cis-1,2-Dichloroethene	4.32	4.40	102	66-116	
79-01-6	Trichloroethene	4.12	3.96	96	66-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: FD-07

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-003DUP

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00709

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/27/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -7.41

Final Pressure (psig): 3.52

Canister Dilution Factor: 2.50

CAS #	Compound	Sample Result		Duplicate Sample Result		Average µg/m³	% RPD	RPD Limit	Data Qualifier
		µg/m³	ppbV	µg/m³	ppbV				
75-01-4	Vinyl Chloride	ND	ND	ND	ND	-	-	25	
156-60-5	trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
156-59-2	cis-1,2-Dichloroethene	0.0418	0.0105	0.0426	0.0108	0.0422	2	25	J
79-01-6	Trichloroethene	0.163	0.0303	0.162	0.0302	0.1625	0.6	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-07

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-005DUP

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00708

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/26/14

Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -3.48

Final Pressure (psig): 3.61

Canister Dilution Factor: 1.63

CAS #	Compound	Sample Result		Duplicate Sample Result		Average µg/m³	% RPD	RPD Limit	Data Qualifier
		µg/m³	ppbV	µg/m³	ppbV				
75-01-4	Vinyl Chloride	ND	ND	ND	ND	-	-	25	
156-60-5	trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
156-59-2	cis-1,2-Dichloroethene	0.179	0.0451	0.179	0.0453	0.179	0	25	
79-01-6	Trichloroethene	0.494	0.0919	0.493	0.0917	0.4935	0.2	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

ALS ENVIRONMENTAL

LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Sample ID: AAS-14

Client Project ID: CTS of Asheville / 6252-12-0006:0003

ALS Project ID: P1402574

ALS Sample ID: P1402574-020DUP

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Container ID: AS00711

Date Collected: 6/25/14

Date Received: 6/26/14

Date Analyzed: 6/30/14

Volume(s) Analyzed: 0.50 Liter(s)

Initial Pressure (psig): -2.83

Final Pressure (psig): 3.60

Canister Dilution Factor: 1.54

CAS #	Compound	Sample Result		Duplicate Sample Result		Average µg/m³	% RPD	RPD Limit	Data Qualifier
		µg/m³	ppbV	µg/m³	ppbV				
75-01-4	Vinyl Chloride	0.0246	0.00963	0.0227	0.00889	0.02365	8	25	J
156-60-5	trans-1,2-Dichloroethene	0.0236	0.00596	0.0233	0.00587	0.02345	1	25	J
156-59-2	cis-1,2-Dichloroethene	0.203	0.0512	0.200	0.0505	0.2015	1	25	
79-01-6	Trichloroethene	0.570	0.106	0.564	0.105	0.567	1	25	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.
Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Method Blank Summary

Test Code: EPA TO-15 SIM
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19
Analyst: Wida Ang
Sample Type: 6.0 L Summa Canister(s)
Test Notes:

Lab File ID: 06261409.D
Date Analyzed: 6/26/14
Time Analyzed: 15:03

Client Sample ID	ALS Sample ID	Lab File ID	Time Analyzed
Lab Control Sample	P140626-LCS	06261410.D	15:30
TB-03	P1402574-001	06261413.D	17:53
AAS-07	P1402574-005	06261414.D	18:22
AAS-07 (Lab Duplicate)	P1402574-005DUP	06261415.D	18:52
AAS-08	P1402574-008	06261417.D	19:52
IAS-08	P1402574-009	06261418.D	20:22
IAS-10	P1402574-012	06261421.D	21:51
IAS-12	P1402574-016	06261424.D	23:17

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Method Blank Summary

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister(s)

Test Notes:

Lab File ID: 06271403.D

Date Analyzed: 6/27/14

Time Analyzed: 01:30

Client Sample ID	ALS Sample ID	Lab File ID	Time Analyzed
Lab Control Sample	P140627-LCS	06271404.D	01:57
FD-06	P1402574-002	06271407.D	06:47
FD-07	P1402574-003	06271408.D	07:14
FD-07 (Lab Duplicate)	P1402574-003DUP	06271409.D	07:42
CAS-07	P1402574-006	06271411.D	08:37
CAS-11	P1402574-014	06271412.D	09:04

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Method Blank Summary

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister(s)

Test Notes:

Lab File ID: 06301404.D

Date Analyzed: 6/30/14

Time Analyzed: 07:16

Client Sample ID	ALS Sample ID	Lab File ID	Time Analyzed
Lab Control Sample	P140630-LCS	06301405.D	07:44
FD-08	P1402574-004	06301408.D	13:57
AAS-09	P1402574-010	06301409.D	14:24
AAS-10	P1402574-011	06301410.D	14:52
AAS-12	P1402574-015	06301411.D	15:19
AAS-13	P1402574-017	06301412.D	15:47
CAS-13	P1402574-018	06301413.D	16:14
AAS-14	P1402574-020	06301414.D	16:41
AAS-14 (Lab Duplicate)	P1402574-020DUP	06301415.D	17:08

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Internal Standard Area and RT Summary

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister(s)

Test Notes:

Lab File ID: 06261408.D

Date Analyzed: 6/26/14

Time Analyzed: 13:26

	IS1 (BCM)			IS2 (DFB)			IS3 (CBZ)		
	AREA	#	RT	AREA	#	RT	AREA	#	RT
24 Hour Standard	20545		6.13	108581		8.73	15943		13.14
Upper Limit	28763		6.46	152013		9.06	22320		13.47
Lower Limit	12327		5.80	65149		8.40	9566		12.81

Client Sample ID		IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
01	Method Blank	20014	6.13	94442	8.73	14699	13.14
02	Lab Control Sample	21014	6.12	109489	8.73	16140	13.14
03	TB-03	19767	6.13	94855	8.73	14407	13.14
04	AAS-07	21385	6.13	115091	8.73	18987	13.14
05	AAS-07 (Lab Duplicate)	22438	6.13	120697	8.73	19585	13.14
06	AAS-08	22978	6.12	119170	8.73	18956	13.13
07	IAS-08	23757	6.13	126205	8.73	20354	13.14
08	IAS-10	23052	6.15	116963	8.74	22208	13.14
09	IAS-12	21464	6.14	117389	8.74	20232	13.14
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (BCM) = Bromochloromethane

IS2 (DFB) = 1,4-Difluorobenzene

IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area

AREA LOWER LIMIT = 60% of internal standard area

RT UPPER LIMIT = 0.33 minutes of internal standard RT

RT LOWER LIMIT = 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an I.

I = Internal standard not within the specified limits. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Internal Standard Area and RT Summary

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Lab File ID: 06271402.D

Analyst: Wida Ang

Date Analyzed: 6/27/14

Sample Type: 6.0 L Summa Canister(s)

Time Analyzed: 01:02

Test Notes:

	IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)			
	AREA	#	RT	#	AREA	#	RT	#
24 Hour Standard	18063		6.12		86909		8.73	
Upper Limit	25288		6.45		121673		9.06	
Lower Limit	10838		5.79		52145		8.40	

Client Sample ID								
01	Method Blank	17620	6.13	72568	8.73	12620	13.14	
02	Lab Control Sample	18277	6.12	88747	8.72	14069	13.14	
03	FD-06	18834	6.13	94810	8.73	16535	13.14	
04	FD-07	19835	6.12	102561	8.73	18201	13.13	
05	FD-07 (Lab Duplicate)	20483	6.12	106626	8.73	18988	13.14	
06	CAS-07	18249	6.13	84537	8.73	17251	13.14	
07	CAS-11	21906	6.13	112026	8.73	19980	13.14	
08								
09								
10								
11								
12								
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17								
18								
19								
20								

IS1 (BCM) = Bromochloromethane

IS2 (DFB) = 1,4-Difluorobenzene

IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area

AREA LOWER LIMIT = 60% of internal standard area

RT UPPER LIMIT = 0.33 minutes of internal standard RT

RT LOWER LIMIT = 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an I.

I = Internal standard not within the specified limits. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: AMEC Environment & Infrastructure, Inc.

Client Project ID: CTS of Asheville / 6252-12-0006.0003

ALS Project ID: P1402574

Internal Standard Area and RT Summary

Test Code: EPA TO-15 SIM

Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19

Analyst: Wida Ang

Sample Type: 6.0 L Summa Canister(s)

Test Notes:

Lab File ID: 06301403.D

Date Analyzed: 6/30/14

Time Analyzed: 06:49

	IS1 (BCM)			IS2 (DFB)			IS3 (CBZ)		
	AREA	#	RT	AREA	#	RT	AREA	#	RT
24 Hour Standard	22765		6.13	116683		8.73	17766		13.14
Upper Limit	31871		6.46	163356		9.06	24872		13.47
Lower Limit	13659		5.80	70010		8.40	10660		12.81

Client Sample ID

01	Method Blank	22325	6.13	106148	8.73	17667	13.14
02	Lab Control Sample	22219	6.12	114006	8.73	18600	13.13
03	FD-08	21197	6.13	106330	8.73	18535	13.14
04	AAS-09	21491	6.13	111394	8.73	21097	13.14
05	AAS-10	22040	6.13	111506	8.73	21533	13.14
06	AAS-12	21877	6.13	112175	8.73	19133	13.14
07	AAS-13	21865	6.13	109670	8.73	20243	13.14
08	CAS-13	22807	6.13	120692	8.73	21604	13.14
09	AAS-14	24454	6.13	124855	8.73	21368	13.13
10	AAS-14 (Lab Duplicate)	23593	6.12	123444	8.73	20951	13.14
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (BCM) = Bromochloromethane

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IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area

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RT UPPER LIMIT = 0.33 minutes of internal standard RT

RT LOWER LIMIT = 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an I.

I = Internal standard not within the specified limits. See case narrative.

Response Factor Report MS19

Method Path : I:\MS19\METHODS\
 Method File : X19060314.M
 Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 Last Update : Wed Jun 04 11:47:01 2014
 Response Via : Initial Calibration

Calibration Files

10 =06031408.D 20 =06031409.D 50 =06031410.D 100 =06031421.D 500 =06031412.D 1000=06031413.D
 2500=06031414.D 20K =06031415.D

Compound	10	20	50	100	500	1000	2500	20K	Avg	%RSD
1) IR Bromochloromethane...	-----ISTD-----									
2) T Dichlorodifluo...	2.953	2.913	2.844	3.000	2.646	2.695	2.603	2.745	2.800	5.31
3) T Chloromethane		0.897	0.832	0.782	0.727	0.710	0.444	0.728	0.731	19.60
4) T Vinyl Chloride	2.843	2.828	2.803	3.062	2.501	2.532	2.529	2.633	2.716	7.34
5) T Bromomethane		1.955	1.688	1.734	1.529	1.539	1.455	1.552	1.636	10.44
6) T Chloroethane	1.543	1.451	1.435	1.516	1.339	1.370	1.318	1.340	1.414	6.04
7) T Acetone			2.443	2.737	1.093	1.120	1.108	1.167	1.611	47.43
8) T Trichlorofluor...	2.907	2.839	2.814	2.972	2.658	2.698	2.617	2.726	2.779	4.49
9) T 1,1-Dichloroet...	1.513	1.454	1.427	1.596	1.403	1.452	1.440	1.557	1.480	4.58
10) T Methylene Chlo...			2.084	1.966	1.558	1.578	1.522	1.614	1.720	14.00
11) T Trichlorotrifl...	1.564	1.494	1.471	1.483	1.360	1.382	1.260	1.383	1.425	6.73
12) T trans-1,2-Dich...	1.578	1.502	1.493	1.630	1.464	1.532	1.528	1.668	1.549	4.55
13) T 1,1-Dichloroet...	2.896	2.849	2.766	3.039	2.700	2.780	2.738	2.910	2.835	3.92
14) T Methyl tert-Bu...	3.584	3.422	3.431	4.272	3.548	3.947	4.223	4.867	3.912	13.15
15) T cis-1,2-Dichlo...	1.585	1.501	1.506	1.669	1.514	1.574	1.571	1.742	1.583	5.36
16) T Chloroform	3.030	2.919	2.789	2.934	2.690	2.718	2.659	2.940	2.835	4.88
17) S 1,2-Dichloroet...	1.735	1.739	1.727	1.732	1.743	1.702	1.680	1.704	1.720	1.30
18) T 1,2-Dichloroet...	2.171	2.179	2.141	2.301	2.089	2.143	2.059	2.222	2.163	3.49
19) T 1,1,1-Trichlor...	2.511	2.498	2.443	2.669	2.358	2.433	2.413	2.623	2.493	4.25
20) T Benzene		6.133	5.803	6.492	5.485	5.750	5.784	6.281	5.961	5.90
21) T Carbon Tetrach...	1.926	1.956	2.019	2.149	2.044	2.130	2.129	2.381	2.092	6.83
22) IR 1,4-Difluorobenzen...	-----ISTD-----									
23) T 1,2-Dichloropr...	0.336	0.333	0.313	0.320	0.293	0.302	0.300	0.328	0.316	5.15
24) T Bromodichlorom...	0.477	0.475	0.451	0.437	0.413	0.422	0.416	0.457	0.443	5.76
25) T Trichloroethene	0.353	0.334	0.321	0.314	0.300	0.309	0.311	0.352	0.324	6.22
26) T 1,4-Dioxane	0.193	0.188	0.191	0.217	0.199	0.219	0.229	0.276	0.214	13.60
27) T cis-1,3-Dichlo...	0.384	0.375	0.374	0.407	0.376	0.408	0.437	0.534	0.412	13.14
28) T trans-1,3-Dich...	0.295	0.311	0.314	0.350	0.322	0.359	0.392	0.495	0.355	18.21
29) T 1,1,2-Trichlor...	0.281	0.285	0.273	0.267	0.250	0.256	0.253	0.281	0.268	5.16
30) S Toluene-d8 (SS2)	1.057	1.061	1.056	1.050	1.021	1.032	1.061	1.095	1.054	2.07
31) T Toluene	1.459	1.296	1.235	1.265	1.147	1.204	1.222	1.382	1.276	7.93
32) T 1,2-Dibromoethane	0.338	0.325	0.318	0.318	0.297	0.311	0.312	0.358	0.322	5.80
33) T Tetrachloroethene	0.391	0.380	0.363	0.354	0.342	0.350	0.344	0.402	0.366	6.22
34) IR Chlorobenzene-d5 (...)	-----ISTD-----									
35) T Chlorobenzene	5.793	5.266	4.974	4.880	4.822	5.000	4.789	4.864	5.049	6.66
36) T Ethylbenzene	7.061	6.586	6.418	7.158	7.215	8.143	8.389	8.900	7.484	11.91
37) T m,p-Xylene	5.131	4.820	4.842	5.650	6.303	7.057	7.056	7.695	6.069	18.44

DA 6/5/14

Response Factor Report MS19

Method Path : I:\MS19\METHODS\

Method File : X19060314.M

Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

38) T	o-Xylene	2.493	2.340	2.469	2.933	3.199	3.485	3.455	3.771	3.018	17.95
39) T	1,1,2,2-Tetrac...	3.937	3.779	3.690	3.638	3.535	3.675	3.563	3.842	3.707	3.71
40) S	Bromofluoroben...	2.071	2.132	2.230	2.262	2.296	2.284	2.312	2.132	2.215	4.10
41) T	1,3-Dichlorobe...	4.032	3.801	3.903	3.985	3.898	4.074	3.985	4.510	4.024	5.33
42) T	1,4-Dichlorobe...	3.979	3.852	3.966	4.139	4.056	4.212	4.131	4.503	4.105	4.81
43) T	1,2-Dichlorobe...	3.989	3.920	3.918	3.960	3.816	3.974	3.894	4.125	3.950	2.26
44) T	1,2,4-Trichlor...	2.218	2.151	2.225	2.473	1.880	2.061	2.124	2.747	2.235	11.90
45) T	Naphthalene	0.623	0.583	0.610	0.779	0.582	0.703	0.760	1.060	0.713	E1 22.51
46) T	Hexachlorobuta...	1.843	1.757	1.698	1.713	1.470	1.538	1.505	1.720	1.655	8.10

(#) = Out of Range

6/5/14

Data File : I:\MS19\DATA\2014_06\03\06031422.D
 Acq On : 4 Jun 2014 11:25
 Sample : 500pg TO-15-SIM ICV STD
 Misc : S29-06031401/S29-05231406 (6/21)

Vial: 15
 Operator: WA/LC
 Inst : MS19

Quant Time: Jun 05 07:23:09 2014
 Quant Method : I:\MS19\METHODS\X19060314.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Wed Jun 04 11:47:01 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	6.12	130	25590	1000.00	pg	0.00
22) 1,4-Difluorobenzene (IS2)	8.73	114	137603	1000.00	pg	0.00
34) Chlorobenzene-d5 (IS3)	13.14	54	22990	1000.00	pg	0.00

System Monitoring Compounds

17) 1,2-Dichloroethane-d4 ...	7.13	65	46352	1052.94	pg	0.00
Spiked Amount	1000.000	Range	70 - 130	Recovery	=	105.29%
30) Toluene-d8 (SS2)	11.39	98	145096	1000.21	pg	0.00
Spiked Amount	1000.000	Range	70 - 130	Recovery	=	100.02%
40) Bromofluorobenzene (SS3)	14.25	174	53059	1041.94	pg	0.00
Spiked Amount	1000.000	Range	70 - 130	Recovery	=	104.19%

Target Compounds

						Qvalue
2) Dichlorodifluoromethane...	1.98	85	38748	540.818	pg	100
3) Chloromethane	1.87	52	10256	548.152	pg	99
4) Vinyl Chloride	2.04	62	36828	529.795	pg	99
5) Bromomethane	2.34	94	20786	496.517	pg	100
6) Chloroethane	2.50	64	18828	520.416	pg	100
7) Acetone	3.01	58	81255	1970.667	pg	92
8) Trichlorofluoromethane	3.14	101	38509	541.519	pg	100
9) 1,1-Dichloroethene	3.68	96	22001	580.823	pg	98
10) Methylene Chloride	3.81	84	23410	531.783	pg	98
11) Trichlorotrifluoroethane	4.12	151	20075	550.667	pg	100
12) trans-1,2-Dichloroethene	4.75	96	21940	553.389	pg	100
13) 1,1-Dichloroethane	4.96	63	40204	554.253	pg	100
14) Methyl tert-Butyl Ether	5.11	73	58900	588.410	pg	99
15) cis-1,2-Dichloroethene	5.94	96	23208	573.004	pg	100
16) Chloroform	6.33	83	39800	548.613	pg	100
18) 1,2-Dichloroethane	7.27	62	31193	563.561	pg	100
19) 1,1,1-Trichloroethane	7.61	97	34487	540.492	pg	100
20) Benzene	8.17	78	86805	569.019	pg	100
21) Carbon Tetrachloride	8.35	117	28747	537.038	pg	100
23) 1,2-Dichloropropane	9.18	63	22401	515.774	pg	99
24) Bromodichloromethane	9.40	83	30573	501.039	pg	100
25) Trichloroethene	9.47	130	22199	497.668	pg	99
26) 1,4-Dioxane	9.53	88	16915	574.382	pg	96
27) cis-1,3-Dichloropropene	10.47	75	28686	505.954	pg	99
28) trans-1,3-Dichloropropene	11.06	75	27845	570.170	pg	100
29) 1,1,2-Trichloroethane	11.20	83	18253	494.388	pg	99
31) Toluene	11.49	91	90039	512.734	pg	100
32) 1,2-Dibromoethane	12.13	107	22763	513.350	pg	100
33) Tetrachloroethene	12.61	166	23195	460.682	pg	99
35) Chlorobenzene	13.17	112	57806	498.044	pg	100
36) Ethylbenzene	13.49	91	91108	529.555	pg	99
37) m,p-Xylene	13.63	91	152826	1095.258	pg	100
38) o-Xylene	13.95	106	37450	539.758	pg	100
39) 1,1,2,2-Tetrachloroethane	13.94	83	38430	450.886	pg	100
41) 1,3-Dichlorobenzene	15.20	146	48120	520.208	pg	100
42) 1,4-Dichlorobenzene	15.25	146	48800	517.148	pg	100
43) 1,2-Dichlorobenzene	15.47	146	45322	499.143	pg	100
44) 1,2,4-Trichlorobenzene	16.63	182	27622	537.582	pg	99
45) Naphthalene	16.71	128	93180	568.712	pg	100
46) Hexachlorobutadiene	16.96	225	18336	481.808	pg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

INITIAL CALIBRATION VERIFICATION CHECK SHEET - MS19

Data File Name: 06031422.D
 Data File Path: I:\MS19\DATA\2014_06\03\
 Operator: WA/LC
 Instrument Name: MS19
 Sample Name: 500pg TO-15-SIM ICV STD
 Misc Info: S29-06031401/S29-05231406 (6/21)
 Date Acquired: 6/4/14 11:25
 Acq. Method File: TO15SIM.M

#	Compound Name	Ret. Time	Amount Spiked (pg)	Amount Found (pg)	Percent Recovery	Lower Limit	Upper Limit	Flag
2)	Dichlorodifluoromethane (CFC 12)	1.98	510.0	540.8	106.0	70	130	*
3)	Chloromethane	1.87	495.0	548.2	110.7	70	130	*
4)	Vinyl Chloride	2.04	500.0	529.8	106.0	70	130	*
5)	Bromomethane	2.34	500.0	496.5	99.3	70	130	*
6)	Chloroethane	2.50	500.0	520.4	104.1	70	130	*
7)	Acetone	3.01	2695.0	1970.7	73.1	70	130	*
8)	Trichlorofluoromethane	3.14	510.0	541.5	106.2	70	130	*
9)	1,1-Dichloroethene	3.68	545.0	580.8	106.6	70	130	*
10)	Methylene Chloride	3.81	535.0	531.8	99.4	70	130	*
11)	Trichlorotrifluoroethane	4.12	535.0	550.7	102.9	70	130	*
12)	trans-1,2-Dichloroethene	4.75	525.0	553.4	105.4	70	130	*
13)	1,1-Dichloroethane	4.96	520.0	554.3	106.6	70	130	*
14)	Methyl tert-Butyl Ether	5.11	530.0	588.4	111.0	70	130	*
15)	cis-1,2-Dichloroethene	5.94	540.0	573.0	106.1	70	130	*
16)	Chloroform	6.33	540.0	548.6	101.6	70	130	*
18)	1,2-Dichloroethane	7.27	525.0	563.6	107.3	70	130	*
19)	1,1,1-Trichloroethane	7.61	515.0	540.5	104.9	70	130	*
20)	Benzene	8.17	550.0	569.0	103.5	70	130	*
21)	Carbon Tetrachloride	8.35	550.0	537.0	97.6	70	130	*
23)	1,2-Dichloropropane	9.18	515.0	515.8	100.2	70	130	*
24)	Bromodichloromethane	9.40	530.0	501.0	94.5	70	130	*
25)	Trichloroethene	9.47	515.0	497.7	96.6	70	130	*
26)	1,4-Dioxane	9.53	540.0	574.4	106.4	70	130	*
27)	cis-1,3-Dichloropropene	10.47	495.0	506.0	102.2	70	130	*
28)	trans-1,3-Dichloropropene	11.06	555.0	570.2	102.7	70	130	*
29)	1,1,2-Trichloroethane	11.20	510.0	494.4	96.9	70	130	*
31)	Toluene	11.49	530.0	512.7	96.7	70	130	*
32)	1,2-Dibromoethane	12.13	525.0	513.3	97.8	70	130	*
33)	Tetrachloroethene	12.61	480.0	460.7	96.0	70	130	*
35)	Chlorobenzene	13.17	530.0	498.0	94.0	70	130	*
36)	Ethylbenzene	13.49	520.0	529.6	101.8	70	130	*
37)	m,p-Xylene	13.63	1020.0	1095.3	107.4	70	130	*
38)	o-Xylene	13.95	505.0	539.8	106.9	70	130	*
39)	1,1,2,2-Tetrachloroethane	13.94	490.0	450.9	92.0	70	130	*
41)	1,3-Dichlorobenzene	15.20	535.0	520.2	97.2	70	130	*
42)	1,4-Dichlorobenzene	15.25	535.0	517.1	96.7	70	130	*
43)	1,2-Dichlorobenzene	15.47	520.0	499.1	96.0	70	130	*
44)	1,2,4-Trichlorobenzene	16.63	530.0	537.6	101.4	70	130	*
45)	Naphthalene	16.71	475.0	568.7	119.7	70	130	*
46)	Hexachlorobutadiene	16.96	530.0	481.8	90.9	70	130	*

Acetone limits 70 - 130 as advisory limits

ST 6/6/14

Response Factor Report MS19

Method Path : I:\MS19\METHODS\

Method File : X19062814.M

Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

Last Update : Tue Jul 01 09:13:23 2014

Response Via : Initial Calibration

Calibration Files

10 =06281406.D 20 =06281407.D 50 =06281408.D 100 =06281409.D 500 =06281410.D 1000=06281411.D
 2500=06281412.D 20K =06281413.D

Compound	10	20	50	100	500	1000	2500	20K	Avg	%RSD
1) I Bromochloromethane...	-----ISTD-----									
2) T Dichlorodifluo...	3.428	3.266	3.135	3.763	3.102	2.979	2.942	2.993	3.201	8.72
3) T Chloromethane	0.856	0.744	0.678	0.800	0.662	0.626	0.556	0.637	0.695	14.20
4) T Vinyl Chloride	2.477	2.349	2.202	2.579	2.127	2.052	2.064	2.077	2.241	9.08
5) T Bromomethane	1.702	1.323	1.264	1.551	1.255	1.196	1.159	1.266	1.339	14.06
6) T Chloroethane	1.257	1.153	1.121	1.328	1.109	1.067	1.048	1.058	1.143	8.82
7) T Acetone				1.124	0.970	0.909	0.899	0.951	0.971	9.33
8) T Trichlorofluor...	2.343	2.256	2.465	2.554	2.171	2.330	2.285	2.036	2.305	7.02
9) T 1,1-Dichloroet...	1.274	1.236	1.184	1.428	1.211	1.169	1.172	1.232	1.238	6.85
10) T Methylene Chlo...			1.421	1.576	1.278	1.222	1.206	1.241	1.324	11.02
11) T Trichlorotrifl...	1.391	1.290	1.247	1.428	1.183	1.123	1.090	1.115	1.233	10.41
12) T trans-1,2-Dich...	1.423	1.286	1.245	1.462	1.247	1.213	1.228	1.310	1.302	7.13
13) T 1,1-Dichloroet...	2.463	2.322	2.244	2.771	2.301	2.209	2.204	2.261	2.347	8.11
14) T Methyl tert-Bu...	3.313	3.038	3.016	3.541	3.197	3.310	3.541	3.920	3.359	8.95
15) T cis-1,2-Dichlo...	1.333	1.258	1.229	1.490	1.292	1.255	1.273	1.388	1.315	6.61
16) T Chloroform	2.580	2.453	2.298	2.794	2.339	2.224	2.185	2.373	2.406	8.35
17) S 1,2-Dichloroet...	1.890	1.909	1.896	1.928	1.950	1.929	1.865	1.890	1.907	1.44
18) T 1,2-Dichloroet...	1.929	1.859	1.818	2.177	1.862	1.794	1.760	1.848	1.881	6.90
19) T 1,1,1-Trichlor...	2.341	2.252	2.140	2.549	2.155	2.073	2.067	2.175	2.219	7.26
20) T Benzene		5.107	4.710	5.612	4.656	4.572	4.661	4.999	4.902	7.54
21) T Carbon Tetrach...	1.597	1.610	1.616	1.961	1.720	1.677	1.699	1.919	1.725	8.14
22) I 1,4-Difluorobenzen...	-----ISTD-----									
23) T 1,2-Dichloropr...	0.295	0.270	0.257	0.304	0.254	0.247	0.247	0.264	0.267	8.01
24) T Bromodichlorom...	0.411	0.402	0.373	0.443	0.368	0.356	0.355	0.382	0.386	7.90
25) T Trichloroethene	0.308	0.282	0.267	0.306	0.256	0.248	0.252	0.288	0.276	8.55
26) T 1,4-Dioxane	0.196	0.164	0.161	0.194	0.180	0.187	0.199	0.235	0.189	12.20
27) T cis-1,3-Dichlo...	0.338	0.318	0.309	0.367	0.330	0.335	0.360	0.436	0.349	11.46
28) T trans-1,3-Dich...	0.276	0.263	0.269	0.305	0.288	0.299	0.328	0.412	0.305	15.74
29) T 1,1,2-Trichlor...	0.238	0.240	0.223	0.260	0.217	0.209	0.210	0.230	0.228	7.57
30) S Toluene-d8 (SS2)	0.945	0.943	0.939	0.923	0.926	0.941	0.950	0.984	0.944	1.99
31) T Toluene	1.212	1.065	0.985	1.151	0.983	0.972	1.000	1.142	1.064	8.77
32) T 1,2-Dibromoethane	0.289	0.274	0.268	0.306	0.265	0.260	0.265	0.302	0.279	6.44
33) T Tetrachloroethene	0.334	0.322	0.301	0.354	0.298	0.287	0.287	0.343	0.316	8.29
34) I Chlorobenzene-d5 (...)	-----ISTD-----									
35) T Chlorobenzene	4.932	4.494	4.186	4.976	4.170	3.989	3.963	4.055	4.346	9.44
36) T Ethylbenzene	5.914	5.412	5.256	6.348	6.059	6.349	6.820	7.441	6.200	11.54
37) T m,p-Xylene	4.279	3.980	3.953	5.000	5.390	5.606	5.874	6.709	5.099	19.30

Response Factor Report MS19

Method Path : I:\MS19\METHODS\

Method File : X19062814.M

Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

38) T	o-Xylene	2.101	1.974	2.062	2.625	2.736	2.769	2.875	3.293	2.554	18.22
39) T	1,1,2,2-Tetrac...	3.207	3.069	2.933	3.560	3.053	2.950	2.987	3.342	3.137	7.00
40) S	Bromofluoroben...	1.972	1.953	1.957	1.985	2.084	2.100	2.106	1.981	2.017	3.32
41) T	1,3-Dichlorobe...	3.542	3.323	3.236	3.982	3.557	3.489	3.619	4.168	3.615	8.70
42) T	1,4-Dichlorobe...	3.633	3.365	3.396	4.235	3.855	3.737	3.851	4.185	3.782	8.51
43) T	1,2-Dichlorobe...	3.460	3.294	3.241	3.963	3.495	3.417	3.530	3.769	3.521	6.80
44) T	1,2,4-Trichlor...	2.040	1.916	1.869	1.936	1.856	1.900	2.106	2.533	2.020	11.12
45) T	Naphthalene	5.627	5.142	5.359	5.433	6.239	7.007	8.170	9.791	6.596	24.92
46) T	Hexachlorobuta...	1.519	1.454	1.362	1.571	1.357	1.328	1.382	1.563	1.442	6.81

(#) = Out of Range

Data File : I:\MS19\DATA\2014_06\28\06281416.D
 Acq On : 28 Jun 2014 18:49
 Sample : 500pg TO-15-SIM ICV STD
 Misc : S29-06271401/S29-06271411(7/25)

Vial: 15
 Operator: WA/LC
 Inst : MS19

Quant Time: Jul 01 09:17:17 2014
 Quant Method : I:\MS19\METHODS\X19062814.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Tue Jul 01 09:13:23 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	6.12	130	25279	1000.00	pg	0.00
22) 1,4-Difluorobenzene (IS2)	8.73	114	133762	1000.00	pg	0.00
34) Chlorobenzene-d5 (IS3)	13.14	54	21866	1000.00	pg	0.00

System Monitoring Compounds

17) 1,2-Dichloroethane-d4 ...	7.13	65	50444	1046.36	pg	0.00
Spiked Amount	1000.000		Recovery	=	104.64%	
30) Toluene-d8 (SS2)	11.39	98	125043	990.36	pg	0.00
Spiked Amount	1000.000		Recovery	=	99.04%	
40) Bromofluorobenzene (SS3)	14.25	174	44459	1007.97	pg	0.00
Spiked Amount	1000.000		Recovery	=	100.80%	

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethan...	1.76	85	40394	499.203	pg	100
3) Chloromethane	1.87	52	8408	478.725	pg	99
4) Vinyl Chloride	2.04	62	29591	522.362	pg	99
5) Bromomethane	2.34	94	17227	508.777	pg	100
6) Chloroethane	2.50	64	15217	526.875	pg	99
7) Acetone	3.02	58	73558	2998.266	pg	100
8) Trichlorofluoromethane	3.13	101	31690	543.843	pg	100
9) 1,1-Dichloroethene	3.68	96	17476	558.372	pg	98
10) Methylene Chloride	3.82	84	18104	540.846	pg	98
11) Trichlorotrifluoroethane	4.12	151	16369	525.091	pg	100
12) trans-1,2-Dichloroethene	4.75	96	17504	531.907	pg	100
13) 1,1-Dichloroethane	4.96	63	31543	531.697	pg	100
14) Methyl tert-Butyl Ether	5.11	73	49231	579.720	pg	100
15) cis-1,2-Dichloroethene	5.95	96	18556	558.326	pg	100
16) Chloroform	6.33	83	32246	530.220	pg	100
18) 1,2-Dichloroethane	7.27	62	26223	551.535	pg	100
19) 1,1,1-Trichloroethane	7.60	97	28623	510.238	pg	100
20) Benzene	8.17	78	68649	553.946	pg	100
21) Carbon Tetrachloride	8.35	117	23690	543.385	pg	99
23) 1,2-Dichloropropane	9.18	63	17266	483.123	pg	100
24) Bromodichloromethane	9.40	83	24576	475.564	pg	100
25) Trichloroethene	9.47	130	17992	487.472	pg	100
26) 1,4-Dioxane	9.52	88	13436	530.443	pg	98
27) cis-1,3-Dichloropropene	10.47	75	23078	494.281	pg	99
28) trans-1,3-Dichloropropene	11.06	75	22933	562.353	pg	99
29) 1,1,2-Trichloroethane	11.20	83	14450	473.271	pg	99
31) Toluene	11.49	91	71653	503.590	pg	100
32) 1,2-Dibromoethane	12.13	107	18517	496.833	pg	100
33) Tetrachloroethene	12.61	166	19116	452.470	pg	99
35) Chlorobenzene	13.17	112	47222	496.960	pg	100
36) Ethylbenzene	13.49	91	72595	535.495	pg	100
37) m,p-Xylene.	13.62	91	122058	1094.778	pg	100
38) o-Xylene	13.95	106	29678	531.355	pg	98
39) 1,1,2,2-Tetrachloroethane	13.94	83	30180	439.914	pg	100
41) 1,3-Dichlorobenzene	15.20	146	39793	503.475	pg	100
42) 1,4-Dichlorobenzene	15.24	146	40820	493.593	pg	100
43) 1,2-Dichlorobenzene	15.46	146	37219	483.417	pg	100
44) 1,2,4-Trichlorobenzene	16.63	182	22270	504.312	pg	99
45) Naphthalene	16.70	128	73708	511.054	pg	100
46) Hexachlorobutadiene	16.96	225	14620	463.671	pg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

7/1/14

7/1/14

INITIAL CALIBRATION VERIFICATION CHECK SHEET - MS19

Data File Name: 06281416.D
 Data File Path: I:\MS19\DATA\2014_06\28\
 Operator: WA/LC
 Instrument Name: MS19
 Sample Name: 500pg TO-15-SIM ICV STD
 Misc Info: S29-06271401/S29-06271411(7/25)
 Date Acquired: 6/28/14 18:49
 Acq. Method File: TO15SIM.M

#	Compound Name	Ret. Time	Amount Spiked (pg)	Amount Found (pg)	Percent Recovery	Lower Limit	Upper Limit	Flag
2)	Dichlorodifluoromethane (CFC 12)	1.76	510.0	499.2	97.9	70	130	*
3)	Chloromethane	1.87	495.0	478.7	96.7	70	130	*
4)	Vinyl Chloride	2.04	500.0	522.4	104.5	70	130	*
5)	Bromomethane	2.34	500.0	508.8	101.8	70	130	*
6)	Chloroethane	2.50	500.0	526.9	105.4	70	130	*
7)	Acetone	3.02	2695.0	2998.3	111.3	70	130	*
8)	Trichlorofluoromethane	3.13	510.0	543.8	106.6	70	130	*
9)	1,1-Dichloroethene	3.68	545.0	558.4	102.5	70	130	*
10)	Methylene Chloride	3.82	535.0	540.8	101.1	70	130	*
11)	Trichlorotrifluoroethane	4.12	535.0	525.1	98.1	70	130	*
12)	trans-1,2-Dichloroethene	4.75	525.0	531.9	101.3	70	130	*
13)	1,1-Dichloroethane	4.96	520.0	531.7	102.2	70	130	*
14)	Methyl tert-Butyl Ether	5.11	530.0	579.7	109.4	70	130	*
15)	cis-1,2-Dichloroethene	5.95	540.0	558.3	103.4	70	130	*
16)	Chloroform	6.33	540.0	530.2	98.2	70	130	*
18)	1,2-Dichloroethane	7.27	525.0	551.5	105.1	70	130	*
19)	1,1,1-Trichloroethane	7.60	515.0	510.2	99.1	70	130	*
20)	Benzene	8.17	550.0	553.9	100.7	70	130	*
21)	Carbon Tetrachloride	8.35	550.0	543.4	98.8	70	130	*
23)	1,2-Dichloropropane	9.18	515.0	483.1	93.8	70	130	*
24)	Bromodichloromethane	9.40	530.0	475.6	89.7	70	130	*
25)	Trichloroethene	9.47	515.0	487.5	94.7	70	130	*
26)	1,4-Dioxane	9.52	540.0	530.4	98.2	70	130	*
27)	cis-1,3-Dichloropropene	10.47	495.0	494.3	99.9	70	130	*
28)	trans-1,3-Dichloropropene	11.06	555.0	562.4	101.3	70	130	*
29)	1,1,2-Trichloroethane	11.20	510.0	473.3	92.8	70	130	*
31)	Toluene	11.49	530.0	503.6	95.0	70	130	*
32)	1,2-Dibromoethane	12.13	525.0	496.8	94.6	70	130	*
33)	Tetrachloroethene	12.61	480.0	452.5	94.3	70	130	*
35)	Chlorobenzene	13.17	530.0	497.0	93.8	70	130	*
36)	Ethylbenzene	13.49	520.0	535.5	103.0	70	130	*
37)	m,p-Xylene	13.62	1020.0	1094.8	107.3	70	130	*
38)	o-Xylene	13.95	505.0	531.4	105.2	70	130	*
39)	1,1,2,2-Tetrachloroethane	13.94	490.0	439.9	89.8	70	130	*
41)	1,3-Dichlorobenzene	15.20	535.0	503.5	94.1	70	130	*
42)	1,4-Dichlorobenzene	15.24	535.0	493.6	92.3	70	130	*
43)	1,2-Dichlorobenzene	15.46	520.0	483.4	93.0	70	130	*
44)	1,2,4-Trichlorobenzene	16.63	530.0	504.3	95.2	70	130	*
45)	Naphthalene	16.70	475.0	511.1	107.6	70	130	*
46)	Hexachlorobutadiene	16.96	530.0	463.7	87.5	70	130	*

Acetone limits 70 - 130 as advisory limits

Evaluate Continuing Calibration Report

Data File : I:\MS19\DATA\2014_06\26\06261408.D
 Acq On : 26 Jun 2014 13:26
 Sample : 500pg TO-15/SIM CCV Std
 Misc : S29-06261403/S29-06121407 (7/11)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jun 26 14:36:36 2014
 Quant Method : I:\MS19\METHODS\X19060314.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Wed Jun 04 11:47:01 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 IR	Bromochloromethane (IS1)	1.000	1.000	0.0	81	0.00
2 T	Dichlorodifluoromethane (CF	2.800	3.154	-12.6	97	0.00
3 T	Chloromethane	0.731	0.844	-15.5	95	0.00
4 T	Vinyl Chloride	2.716	2.773	-2.1	90	0.00
5 T	Bromomethane	1.636	1.707	-4.3	91	0.00
6 T	Chloroethane	1.414	1.469	-3.9	89	0.00
7 T	Acetone	1.611	1.363	15.4	102	0.00
8 T	Trichlorofluoromethane	2.779	3.345	-20.4	103	0.00
9 T	1,1-Dichloroethene	1.480	1.604	-8.4	93	0.00
10 T	Methylene Chloride	1.720	1.743	-1.3	91	0.00
11 T	Trichlorotrifluoroethane	1.425	1.578	-10.7	95	0.00
12 T	trans-1,2-Dichloroethene	1.549	1.690	-9.1	94	0.00
13 T	1,1-Dichloroethane	2.835	3.018	-6.5	91	0.00
14 T	Methyl tert-Butyl Ether	3.912	4.475	-14.4	103	0.00
15 T	cis-1,2-Dichloroethene	1.583	1.734	-9.5	93	0.00
16 T	Chloroform	2.835	3.103	-9.5	94	0.00
17 S	1,2-Dichloroethane-d4 (SS1)	1.720	1.778	-3.4	83	0.00
18 T	1,2-Dichloroethane	2.163	2.443	-12.9	95	0.00
19 T	1,1,1-Trichloroethane	2.493	2.834	-13.7	98	0.00
20 T	Benzene	5.961	6.220	-4.3	92	0.00
21 T	Carbon Tetrachloride	2.092	2.455	-17.4	98	0.00
22 IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	84	0.00
23 T	1,2-Dichloropropane	0.316	0.317	-0.3	91	0.00
24 T	Bromodichloromethane	0.443	0.465	-5.0	95	0.00
25 T	Trichloroethene	0.324	0.339	-4.6	95	0.00
26 T	1,4-Dioxane	0.214	0.230	-7.5	97	0.00
27 T	cis-1,3-Dichloropropene	0.412	0.432	-4.9	97	0.00
28 T	trans-1,3-Dichloropropene	0.355	0.379	-6.8	99	0.00
29 T	1,1,2-Trichloroethane	0.268	0.277	-3.4	93	0.00
30 S	Toluene-d8 (SS2)	1.054	0.984	6.6	81	0.00
31 T	Toluene	1.276	1.276	0.0	94	0.00
32 T	1,2-Dibromoethane	0.322	0.340	-5.6	96	0.00
33 T	Tetrachloroethene	0.366	0.388	-6.0	95	0.00
34 IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	80	0.00
35 T	Chlorobenzene	5.049	5.755	-14.0	95	0.00
36 T	Ethylbenzene	7.484	8.780	-17.3	97	0.00
37 T	m,p-Xylene	6.069	7.635	-25.8	97	0.00
38 T	o-Xylene	3.018	3.870	-28.2	96	0.00
39 T	1,1,2,2-Tetrachloroethane	3.707	4.189	-13.0	95	0.00
40 S	Bromofluorobenzene (SS3)	2.215	2.430	-9.7	84	0.00
41 T	1,3-Dichlorobenzene	4.024	4.848	-20.5	99	0.00
42 T	1,4-Dichlorobenzene	4.105	5.093	-24.1	100	0.00
43 T	1,2-Dichlorobenzene	3.950	4.770	-20.8	100	0.00
44 T	1,2,4-Trichlorobenzene	2.235	2.592	-16.0	110	0.00
45 T	Naphthalene	7.127	8.626	-21.0	118	0.00
46 T	Hexachlorobutadiene	1.655	1.900	-14.8	103	0.00

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

6/27/14 *WA* 6/30/14

Data File : I:\MS19\DATA\2014_06\26\06261408.D
 Acq On : 26 Jun 2014 13:26
 Sample : 500pg TO-15/SIM CCV Std
 Misc : S29-06261403/S29-06121407 (7/11)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jun 26 14:36:36 2014
 Quant Method : I:\MS19\METHODS\X19060314.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Wed Jun 04 11:47:01 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev (Min)
1) Bromochloromethane (IS1)	6.13	130	20545	1000.00	pg	0.00
22) 1,4-Difluorobenzene (IS2)	8.73	114	108581	1000.00	pg	0.00
34) Chlorobenzene-d5 (IS3)	13.14	54	15943	1000.00	pg	0.00

System Monitoring Compounds						
17) 1,2-Dichloroethane-d4 ...	7.13	65	36522	1033.37	pg	0.00
Spiked Amount 1000.000	Range 70	- 130	Recovery	=	103.34%	
30) Toluene-d8 (SS2)	11.39	98	106851	933.44	pg	0.00
Spiked Amount 1000.000	Range 70	- 130	Recovery	=	93.34%	
40) Bromofluorobenzene (SS3)	14.25	174	38735	1096.87	pg	0.00
Spiked Amount 1000.000	Range 70	- 130	Recovery	=	109.69%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane...	1.98	85	33049	574.545	pg	100
3) Chloromethane	1.87	52	8582	571.315	pg	98
4) Vinyl Chloride	2.04	62	28486	510.417	pg	100
5) Bromomethane	2.35	94	17539	521.834	pg	100
6) Chloroethane	2.50	64	15243	524.784	pg	100
7) Acetone	3.02	58	75353	2276.291	pg	97
8) Trichlorofluoromethane	3.13	101	34018	595.833	pg	100
9) 1,1-Dichloroethene	3.68	96	17630	579.719	pg	100
10) Methylene Chloride	3.82	84	19336	547.096	pg	99
11) Trichlorotrifluoroethane	4.12	151	17344	592.580	pg	99
12) trans-1,2-Dichloroethene	4.75	96	18404	578.190	pg	100
13) 1,1-Dichloroethane	4.96	63	32247	553.722	pg	100
14) Methyl tert-Butyl Ether	5.11	73	48724	606.278	pg	99
15) cis-1,2-Dichloroethene	5.95	96	19059	586.117	pg	100
16) Chloroform	6.33	83	34106	585.569	pg	100
18) 1,2-Dichloroethane	7.28	62	26347	592.897	pg	100
19) 1,1,1-Trichloroethane	7.60	97	29989	585.410	pg	100
20) Benzene	8.17	78	70283	573.847	pg	100
21) Carbon Tetrachloride	8.35	117	26483	616.232	pg	100
23) 1,2-Dichloropropane	9.17	63	18239	532.190	pg	99
24) Bromodichloromethane	9.40	83	27012	561.002	pg	100
25) Trichloroethene	9.47	130	19131	543.523	pg	100
26) 1,4-Dioxane	9.53	88	13606	585.509	pg	91
27) cis-1,3-Dichloropropene	10.47	75	26511	592.572	pg	99
28) trans-1,3-Dichloropropene	11.06	75	22239	577.094	pg	100
29) 1,1,2-Trichloroethane	11.20	83	15786	541.851	pg	100
31) Toluene	11.49	91	72753	525.033	pg	100
32) 1,2-Dibromoethane	12.13	107	19936	569.765	pg	100
33) Tetrachloroethene	12.61	166	20628	519.204	pg	100
35) Chlorobenzene	13.17	112	49542	615.513	pg	100
36) Ethylbenzene	13.49	91	74191	621.834	pg	100
37) m,p-Xylene	13.62	91	127805	1320.797	pg	99
38) o-Xylene	13.95	106	31777	660.433	pg	99
39) 1,1,2,2-Tetrachloroethane	13.94	83	33728	570.632	pg	99
41) 1,3-Dichlorobenzene	15.20	146	42896	668.708	pg	100
42) 1,4-Dichlorobenzene	15.24	146	43440	663.825	pg	100
43) 1,2-Dichlorobenzene	15.47	146	41446	658.215	pg	100
44) 1,2,4-Trichlorobenzene	16.63	182	22724	637.740	pg	99
45) Naphthalene	16.70	128	70134	617.258	pg	99
46) Hexachlorobutadiene	16.96	225	16505	625.394	pg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : I:\MS19\DATA\2014_06\27\06271402.D
 Acq On : 27 Jun 2014 1:02
 Sample : 500pg TO-15/SIM CCV Std
 Misc : S29-06031401/S29-06121407 (7/11)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jun 27 05:21:54 2014
 Quant Method : I:\MS19\METHODS\X19060314.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Wed Jun 04 11:47:01 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 IR	Bromochloromethane (IS1)	1.000	1.000	0.0	72	0.00
2 T	Dichlorodifluoromethane (CF	2.800	3.032	-8.3	82	0.00
3 T	Chloromethane	0.731	0.822	-12.4	81	0.00
4 T	Vinyl Chloride	2.716	2.680	1.3	77	0.00
5 T	Bromomethane	1.636	1.587	3.0	74	0.00
6 T	Chloroethane	1.414	1.372	3.0	73	0.00
7 T	Acetone	1.611	1.286	20.2	84	0.00
8 T	Trichlorofluoromethane	2.779	2.953	-6.3	80	0.00
9 T	1,1-Dichloroethene	1.480	1.429	3.4	73	0.00
10 T	Methylene Chloride	1.720	1.664	3.3	76	0.00
11 T	Trichlorotrifluoroethane	1.425	1.517	-6.5	80	0.00
12 T	trans-1,2-Dichloroethene	1.549	1.494	3.6	73	0.00
13 T	1,1-Dichloroethane	2.835	2.837	-0.1	75	0.00
14 T	Methyl tert-Butyl Ether	3.912	3.452	11.8	70	0.00
15 T	cis-1,2-Dichloroethene	1.583	1.494	5.6	71	0.00
16 T	Chloroform	2.835	2.935	-3.5	78	0.00
17 S	1,2-Dichloroethane-d4 (SS1)	1.720	1.783	-3.7	73	0.00
18 T	1,2-Dichloroethane	2.163	2.268	-4.9	78	0.00
19 T	1,1,1-Trichloroethane	2.493	2.636	-5.7	80	0.00
20 T	Benzene	5.961	5.392	9.5	70	0.00
21 T	Carbon Tetrachloride	2.092	2.281	-9.0	80	0.00
22 IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	67	0.00
23 T	1,2-Dichloropropane	0.316	0.315	0.3	73	0.00
24 T	Bromodichloromethane	0.443	0.477	-7.7	78	0.00
25 T	Trichloroethene	0.324	0.324	0.0	73	0.00
26 T	1,4-Dioxane	0.214	0.198	7.5	67	0.00
27 T	cis-1,3-Dichloropropene	0.412	0.391	5.1	70	0.00
28 T	trans-1,3-Dichloropropene	0.355	0.341	3.9	71	0.00
29 T	1,1,2-Trichloroethane	0.268	0.281	-4.9	76	0.00
30 S	Toluene-d8 (SS2)	1.054	1.024	2.8	68	0.00
31 T	Toluene	1.276	1.207	5.4	71	0.00
32 T	1,2-Dibromoethane	0.322	0.337	-4.7	76	0.00
33 T	Tetrachloroethene	0.366	0.393	-7.4	77	0.00
34 IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	71	0.00
35 T	Chlorobenzene	5.049	5.085	-0.7	74	0.00
36 T	Ethylbenzene	7.484	6.749	9.8	66	0.00
37 T	m,p-Xylene	6.069	6.239	-2.8	70	0.00
38 T	o-Xylene	3.018	3.253	-7.8	72	0.00
39 T	1,1,2,2-Tetrachloroethane	3.707	3.930	-6.0	78	0.00
40 S	Bromofluorobenzene (SS3)	2.215	2.517	-13.6	77	0.00
41 T	1,3-Dichlorobenzene	4.024	4.453	-10.7	81	0.00
42 T	1,4-Dichlorobenzene	4.105	4.704	-14.6	82	0.00
43 T	1,2-Dichlorobenzene	3.950	4.386	-11.0	81	0.00
44 T	1,2,4-Trichlorobenzene	2.235	2.107	5.7	79	0.00
45 T	Naphthalene	7.127	6.427	9.8	78	0.00
46 T	Hexachlorobutadiene	1.655	1.743	-5.3	84	0.00

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

Data File : I:\MS19\DATA\2014_06\27\06271402.D
 Acq On : 27 Jun 2014 1:02
 Sample : 500pg TO-15/SIM CCV Std
 Misc : S29-06031401/S29-06121407 (7/11)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jun 27 05:21:54 2014
 Quant Method : I:\MS19\METHODS\X19060314.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Wed Jun 04 11:47:01 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	6.12	130	18063	1000.00	pg	0.00
22) 1,4-Difluorobenzene (IS2)	8.73	114	86909	1000.00	pg	0.00
34) Chlorobenzene-d5 (IS3)	13.13	54	14107	1000.00	pg	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
17) 1,2-Dichloroethane-d4 ...	7.13	65	32210	1036.59	pg	0.00
Spiked Amount 1000.000	Range 70 - 130		Recovery =	103.66%		
30) Toluene-d8 (SS2)	11.39	98	88999	971.36	pg	0.00
Spiked Amount 1000.000	Range 70 - 130		Recovery =	97.14%		
40) Bromofluorobenzene (SS3)	14.25	174	35503	1136.20	pg	0.00
Spiked Amount 1000.000	Range 70 - 130		Recovery =	113.62%		

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane...	1.98	85	27931	552.292	pg	100
3) Chloromethane	1.86	52	7348	556.381	pg	99
4) Vinyl Chloride	2.04	62	24207	493.345	pg	100
5) Bromomethane	2.34	94	14335	485.111	pg	100
6) Chloroethane	2.50	64	12519	490.226	pg	99
7) Acetone	3.01	58	62477	2146.662	pg	93
8) Trichlorofluoromethane	3.13	101	26400	525.940	pg	100
9) 1,1-Dichloroethene	3.68	96	13809	516.469	pg	99
10) Methylene Chloride	3.81	84	16229	522.282	pg	99
11) Trichlorotrifluoroethane	4.11	151	14658	569.625	pg	99
12) trans-1,2-Dichloroethene	4.75	96	14301	511.023	pg	100
13) 1,1-Dichloroethane	4.96	63	26646	520.416	pg	100
14) Methyl tert-Butyl Ether	5.11	73	33046	467.697	pg	99
15) cis-1,2-Dichloroethene	5.94	96	14440	505.089	pg	100
16) Chloroform	6.33	83	28363	553.880	pg	100
18) 1,2-Dichloroethane	7.28	62	21503	550.381	pg	100
19) 1,1,1-Trichloroethane	7.60	97	24521	544.443	pg	100
20) Benzene	8.17	78	53570	497.489	pg	100
21) Carbon Tetrachloride	8.35	117	21631	572.492	pg	100
23) 1,2-Dichloropropane	9.17	63	14529	529.652	pg	98
24) Bromodichloromethane	9.40	83	22157	574.920	pg	100
25) Trichloroethene	9.47	130	14624	519.081	pg	100
26) 1,4-Dioxane	9.52	88	9383	504.468	pg	96
27) cis-1,3-Dichloropropene	10.47	75	19186	535.783	pg	100
28) trans-1,3-Dichloropropene	11.06	75	16022	519.442	pg	100
29) 1,1,2-Trichloroethane	11.20	83	12839	550.590	pg	99
31) Toluene	11.49	91	55074	496.560	pg	100
32) 1,2-Dibromoethane	12.13	107	15819	564.841	pg	100
33) Tetrachloroethene	12.62	166	16730	526.097	pg	100
35) Chlorobenzene	13.17	112	38740	543.950	pg	100
36) Ethylbenzene	13.49	91	50460	477.976	pg	100
37) m,p-Xylene	13.63	91	92418	1079.394	pg	100
38) o-Xylene	13.95	106	23637	555.193	pg	99
39) 1,1,2,2-Tetrachloroethane	13.94	83	27996	535.299	pg	99
41) 1,3-Dichlorobenzene	15.20	146	34865	614.250	pg	100
42) 1,4-Dichlorobenzene	15.25	146	35500	613.095	pg	100
43) 1,2-Dichlorobenzene	15.47	146	33718	605.177	pg	100
44) 1,2,4-Trichlorobenzene	16.63	182	16346	518.448	pg	99
45) Naphthalene	16.71	128	46239	459.920	pg	100
46) Hexachlorobutadiene	16.96	225	13403	573.952	pg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : I:\MS19\DATA\2014_06\30\06301403.D
 Acq On : 30 Jun 2014 6:49
 Sample : 500pg TO-15-SIM CCV STD
 Misc : S29-06271401/S29-062614013(7/25)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jul 01 09:32:55 2014
 Quant Method : I:\MS19\METHODS\X19062814.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Tue Jul 01 09:13:23 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	Bromochloromethane (IS1)	1.000	1.000	0.0	97	0.00
2 T	Dichlorodifluoromethane (CF	3.201	3.228	-0.8	101	0.00
3 T	Chloromethane	0.695	0.685	1.4	100	0.00
4 T	Vinyl Chloride	2.241	2.272	-1.4	103	0.00
5 T	Bromomethane	1.339	1.339	0.0	103	0.00
6 T	Chloroethane	1.143	1.158	-1.3	101	0.00
7 T	Acetone	0.971	0.986	-1.5	98	0.00
8 T	Trichlorofluoromethane	2.305	2.213	4.0	99	0.00
9 T	1,1-Dichloroethene	1.238	1.260	-1.8	101	0.00
10 T	Methylene Chloride	1.324	1.307	1.3	99	0.00
11 T	Trichlorotrifluoroethane	1.233	1.215	1.5	99	0.00
12 T	trans-1,2-Dichloroethene	1.302	1.299	0.2	101	0.00
13 T	1,1-Dichloroethane	2.347	2.380	-1.4	100	0.00
14 T	Methyl tert-Butyl Ether	3.359	3.448	-2.6	104	0.00
15 T	cis-1,2-Dichloroethene	1.315	1.351	-2.7	101	0.00
16 T	Chloroform	2.406	2.388	0.7	99	0.00
17 S	1,2-Dichloroethane-d4 (SS1)	1.907	1.947	-2.1	97	0.00
18 T	1,2-Dichloroethane	1.881	1.922	-2.2	100	0.00
19 T	1,1,1-Trichloroethane	2.219	2.219	0.0	100	0.00
20 T	Benzene	4.902	4.862	0.8	101	0.00
21 T	Carbon Tetrachloride	1.725	1.767	-2.4	99	0.00
22 I	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	99	0.00
23 T	1,2-Dichloropropane	0.267	0.255	4.5	99	0.00
24 T	Bromodichloromethane	0.386	0.371	3.9	99	0.00
25 T	Trichloroethene	0.276	0.262	5.1	101	0.00
26 T	1,4-Dioxane	0.189	0.188	0.5	103	0.00
27 T	cis-1,3-Dichloropropene	0.349	0.344	1.4	103	0.00
28 T	trans-1,3-Dichloropropene	0.305	0.302	1.0	104	0.00
29 T	1,1,2-Trichloroethane	0.228	0.217	4.8	99	0.00
30 S	Toluene-d8 (SS2)	0.944	0.908	3.8	97	0.00
31 T	Toluene	1.064	1.009	5.2	101	0.00
32 T	1,2-Dibromoethane	0.279	0.266	4.7	99	0.00
33 T	Tetrachloroethene	0.316	0.299	5.4	99	0.00
34 I	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	95	0.00
35 T	Chlorobenzene	4.346	4.385	-0.9	100	0.00
36 T	Ethylbenzene	6.200	6.690	-7.9	105	0.00
37 T	m,p-Xylene	5.099	5.808	-13.9	102	0.00
38 T	o-Xylene	2.554	2.910	-13.9	101	0.00
39 T	1,1,2,2-Tetrachloroethane	3.137	3.173	-1.1	98	0.00
40 S	Bromofluorobenzene (SS3)	2.017	1.978	1.9	90	0.00
41 T	1,3-Dichlorobenzene	3.615	3.704	-2.5	99	0.00
42 T	1,4-Dichlorobenzene	3.782	3.978	-5.2	98	0.00
43 T	1,2-Dichlorobenzene	3.521	3.636	-3.3	98	0.00
44 T	1,2,4-Trichlorobenzene	2.020	2.012	0.4	103	0.00
45 T	Naphthalene	6.596	6.726	-2.0	102	0.00
46 T	Hexachlorobutadiene	1.442	1.433	0.6	100	0.00

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

Data File : I:\MS19\DATA\2014_06\30\06301403.D
 Acq On : 30 Jun 2014 6:49
 Sample : 500pg TO-15-SIM CCV STD
 Misc : S29-06271401/S29-062614013(7/25)

Vial: 16
 Operator: WA/LC
 Inst : MS19

Quant Time: Jul 01 09:32:55 2014
 Quant Method : I:\MS19\METHODS\X19062814.M
 Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
 QLast Update : Tue Jul 01 09:13:23 2014
 Response via : Initial Calibration
 DataAcq Meth:TO15SIM.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	6.13	130	22765	1000.00	pg	0.00
22) 1,4-Difluorobenzene (IS2)	8.73	114	116683	1000.00	pg	0.00
34) Chlorobenzene-d5 (IS3)	13.14	54	17766	1000.00	pg	0.00

System Monitoring Compounds

17) 1,2-Dichloroethane-d4 ...	7.13	65	44328	1021.04	pg	0.00
Spiked Amount 1000.000			Recovery =	102.10%		
30) Toluene-d8 (SS2)	11.39	98	105953	961.99	pg	0.00
Spiked Amount 1000.000			Recovery =	96.20%		
40) Bromofluorobenzene (SS3)	14.25	174	35135	980.41	pg	0.00
Spiked Amount 1000.000			Recovery =	98.04%		

Target Compounds

	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethan...	1.76	85	34908	479.047	pg	100
3) Chloromethane	1.87	52	7878	498.083	pg	100
4) Vinyl Chloride	2.04	62	25856	506.833	pg	100
5) Bromomethane	2.35	94	15542	509.703	pg	100
6) Chloroethane	2.50	64	13312	511.816	pg	100
7) Acetone	3.01	58	61252	2772.380	pg	98
8) Trichlorofluoromethane	3.14	101	27207	518.471	pg	100
9) 1,1-Dichloroethene	3.68	96	15633	554.647	pg	99
10) Methylene Chloride	3.82	84	16808	557.581	pg	99
11) Trichlorotrifluoroethane	4.12	151	15069	536.771	pg	100
12) trans-1,2-Dichloroethene	4.75	96	15673	528.863	pg	100
13) 1,1-Dichloroethane	4.96	63	28988	542.590	pg	100
14) Methyl tert-Butyl Ether	5.12	73	42778	559.361	pg	100
15) cis-1,2-Dichloroethene	5.94	96	16921	565.355	pg	100
16) Chloroform	6.33	83	30447	555.926	pg	100
18) 1,2-Dichloroethane	7.28	62	23631	551.906	pg	100
19) 1,1,1-Trichloroethane	7.60	97	26515	524.858	pg	100
20) Benzene	8.17	78	62541	560.390	pg	100
21) Carbon Tetrachloride	8.35	117	23135	589.256	pg	100
23) 1,2-Dichloropropane	9.17	63	16239	520.895	pg	100
24) Bromodichloromethane	9.40	83	23584	523.168	pg	100
25) Trichloroethene	9.47	130	16488	512.110	pg	99
26) 1,4-Dioxane	9.52	88	11987	542.506	pg	99
27) cis-1,3-Dichloropropene	10.47	75	21093	517.893	pg	99
28) trans-1,3-Dichloropropene	11.06	75	18698	525.616	pg	99
29) 1,1,2-Trichloroethane	11.20	83	13822	518.965	pg	100
31) Toluene	11.49	91	64772	521.862	pg	100
32) 1,2-Dibromoethane	12.13	107	17100	525.970	pg	100
33) Tetrachloroethene	12.62	166	17612	477.888	pg	100
35) Chlorobenzene	13.17	112	43240	560.070	pg	100
36) Ethylbenzene	13.49	91	65366	593.445	pg	100
37) m,p-Xylene	13.62	91	111448	1230.302	pg	100
38) o-Xylene	13.95	106	27405	603.892	pg	100
39) 1,1,2,2-Tetrachloroethane	13.94	83	29598	530.995	pg	100
41) 1,3-Dichlorobenzene	15.20	146	37513	584.161	pg	100
42) 1,4-Dichlorobenzene	15.25	146	37460	557.499	pg	99
43) 1,2-Dichlorobenzene	15.47	146	35852	573.126	pg	100
44) 1,2,4-Trichlorobenzene	16.63	182	20196	562.891	pg	99
45) Naphthalene	16.70	128	60942	520.054	pg	100
46) Hexachlorobutadiene	16.96	225	14252	556.312	pg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed



APPENDIX G

DATA VALIDATION REPORT



DATA VALIDATION REPORT
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina

Introduction

Air samples were collected at the CTS of Asheville, Inc. Superfund Site in Asheville, North Carolina (Site) in June 2014 and submitted for off-site laboratory analysis. Samples were analyzed by ALS Environmental in Simi Valley, California. Results were reported in Sample Delivery Group (SDG) P1402574.

A listing of samples included in this Data Validation Report is presented in Table G.1 and a summary of the analytical results is presented in Table G.2. Samples were analyzed by the following method:

- Volatile organic compounds (VOCs) by USEPA Method TO-15 (Site-specific list)

Deliverables for the off-site laboratory analyses included a Level IV data package.

Data validation was completed based on procedures in the USEPA Region 4 Data Validation Standard Operating Procedures (Region 4 SOP) for Organic Analysis (USEPA, 2008), in conjunction with the laboratory's Method TO-15 Selective Ion Monitoring (SIM) SOP (ALS, 2014) and the CTS of Asheville, Inc. Superfund Site Quality Assurance Project Plan (QAPP), Revision 4 (AMEC, 2014). Quality control limits listed in the Region 4 SOP and QAPP were used during the data evaluation. The validation included the following evaluations:

- Lab report narrative
- Sample collection and chain of custody
- Data package completeness
- Holding times
- Quality control data (blanks, instrument tune and calibrations, lab control samples, duplicates, and surrogate recovery)
- Internal standard response and retention time
- Data transcription
- Calculations
- Electronic data reporting
- Data qualification

The following laboratory or data validation qualifiers are used in the final data presentation.

U = target analyte is not detected at the reported detection limit

J = concentration is estimated

Results are interpreted to be usable as reported by the laboratory.



Data Validation Results

Quality control issues were not identified during the data validation. Several data validation observations are discussed below.

Blanks

Vinyl chloride ($0.0074 \mu\text{g}/\text{m}^3$) was reported in the trip blank (TB-03) associated with the samples indicating the possibility of low concentration field contamination. In accordance with USEPA Region 4 guidelines, the trip blank data results not used to qualify samples. Estimated concentrations of vinyl chloride were reported in AAS-10, AAS-14, and FD-08.

Field Duplicates

A summary of field duplicate results is presented in Table G.3. Acceptable agreement was observed for TCE and cis-1,2-dichloroethene in the duplicate pairs. Vinyl chloride was not detected in AAS-13, but was detected in the associated field duplicate (FD-08) at an estimated concentration of $0.048 \mu\text{g}/\text{m}^3$. Because of the low concentration detected, and the potential for low concentration field contamination discussed above, data qualification actions were not required for the field duplicate data.

Sample Reporting

A subset of project-specific TO-15 compounds (cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride) was reported in the data set.

References

ALS Environmental, 2014. Standard Operating Procedure for Determination of Volatile Organic Compounds in Air Samples Collected in Specially Prepared Canisters and Gas Collection Bags by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 21.0, February 15, 2014.

AMEC, 2014. Vapor Intrusion Assessment Work Plan: Quality Assurance Project Plan (Revision 4), March 14, 2014.

USEPA, 2008. Data Validation Standard Operating Procedures for Organic Analyses, USEPA Region 4, Science and Ecosystem Support Division Quality Assurance Section, MTSB, Revision 3.1, Athens, Georgia, August 2008.

Data Validator: Julie Ricardi

Reviewed By: Chris Ricardi, NRCC-EAC

A handwritten signature in cursive script that reads "Julie Ricardi".

A handwritten signature in cursive script that reads "Chris Ricardi".

Date: 7/07/2014

Date: 7/08/2014

TABLE G.1
Data Validation Report: Sample Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
AMEC Project 6252-12-0060

Location	Field Sample ID	Sample Date	SDG	Lab Sample ID
AAS-07	AAS-07	6/25/2014	P1402574	P1402574-005
AAS-08	AAS-08	6/25/2014	P1402574	P1402574-008
AAS-09	AAS-09	6/25/2014	P1402574	P1402574-010
AAS-10	AAS-10	6/25/2014	P1402574	P1402574-011
AAS-12	AAS-12	6/25/2014	P1402574	P1402574-015
AAS-13	AAS-13	6/25/2014	P1402574	P1402574-017
AAS-13	FD-08	6/25/2014	P1402574	P1402574-004
AAS-14	AAS-14	6/25/2014	P1402574	P1402574-020
CAS-07	CAS-07	6/25/2014	P1402574	P1402574-006
CAS-11	CAS-11	6/25/2014	P1402574	P1402574-014
CAS-11	FD-07	6/25/2014	P1402574	P1402574-003
CAS-13	CAS-13	6/25/2014	P1402574	P1402574-018
IAS-08	FD-06	6/25/2014	P1402574	P1402574-002
IAS-08	IAS-08	6/25/2014	P1402574	P1402574-009
IAS-10	IAS-10	6/25/2014	P1402574	P1402574-012
IAS-12	IAS-12	6/25/2014	P1402574	P1402574-016
QC	TB-03	6/25/2014	P1402574	P1402574-001

Prepared By: WCG 7/03/14
Checked By: JAR 7/04/14

TABLE G.2
Data Validation Report: Sample Result Summary
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
AMEC Project 6252-12-0006

Location		AAS-07		AAS-08		AAS-09		AAS-10		AAS-12		AAS-13	
Sample Date		6/25/14		6/25/14		6/25/14		6/25/14		6/25/14		6/25/14	
Field Sample ID		AAS-07		AAS-08		AAS-09		AAS-10		AAS-12		AAS-13	
Method	Parameter	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
TO-15 SIM	cis-1,2-Dichloroethene	0.18		0.11		0.1		0.25		0.25		0.14	
TO-15 SIM	trans-1,2-Dichloroethene	0.01	U	0.011	U	0.022	U	0.035	U	0.023	U	0.031	U
TO-15 SIM	Trichloroethene	0.49		0.32		0.3		0.74		0.64		0.42	
TO-15 SIM	Vinyl chloride	0.011	U	0.012	U	0.024	U	0.13	J	0.024	U	0.033	U

Location		AAS-13		AAS-14		CAS-07		CAS-11		CAS-11		CAS-13	
Sample Date		6/25/14		6/25/14		6/25/14		6/25/14		6/25/14		6/25/14	
Field Sample ID		FD-08		AAS-14		CAS-07		CAS-11		FD-07		CAS-13	
Method	Parameter	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
TO-15 SIM	cis-1,2-Dichloroethene	0.15		0.2		0.099		0.04	J	0.042	J	0.078	J
TO-15 SIM	trans-1,2-Dichloroethene	0.031	U	0.024	J	0.011	U	0.016	U	0.016	U	0.021	U
TO-15 SIM	Trichloroethene	0.41		0.57		0.34		0.16		0.16		0.25	
TO-15 SIM	Vinyl chloride	0.048	J	0.025	J	0.012	U	0.017	U	0.017	U	0.022	U

Location		IAS-08		IAS-08		IAS-10		IAS-12		QC	
Sample Date		6/25/14		6/25/14		6/25/14		6/25/14		6/25/14	
Field Sample ID		FD-06		IAS-08		IAS-10		IAS-12		TB-03	
Method	Parameter	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
TO-15 SIM	cis-1,2-Dichloroethene	0.058	J	0.06	J	0.12		0.17		0.0061	U
TO-15 SIM	trans-1,2-Dichloroethene	0.024	U	0.024	U	0.011	U	0.016	J	0.0064	U
TO-15 SIM	Trichloroethene	0.21		0.21		0.49		0.51		0.0072	U
TO-15 SIM	Vinyl chloride	0.026	U	0.026	U	0.012	U	0.011	U	0.0074	J

Notes:

1. Concentrations are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
2. U - constituent not detected at the reporting limit.
3. J - concentration is estimated.

Prepared By: WCG 7/08/14

Checked By: JAR 7/08/14

TABLE G.3
Data Validation Report: Field Duplicate RPD Results
CTS of Asheville, Inc. Superfund Site
Asheville, North Carolina
AMEC Project 6252-12-0006

Sample ID	Constituent	Field Sample Result	Flag	Duplicate Sample Result	Flag	RPD (%)
IAS-08/FD-06	cis-1,2-Dichloroethene	0.06	J	0.058	J	NC
IAS-08/FD-06	trans-1,2-Dichloroethene	0.024	U	0.024	U	NC
IAS-08/FD-06	Trichloroethene	0.21		0.21		0
IAS-08/FD-06	Vinyl chloride	0.026	U	0.026	U	NC
CAS-11/FD-07	cis-1,2-Dichloroethene	0.04	J	0.042	J	NC
CAS-11/FD-07	trans-1,2-Dichloroethene	0.016	U	0.016	U	NC
CAS-11/FD-07	Trichloroethene	0.16		0.16		0
CAS-11/FD-07	Vinyl chloride	0.017	U	0.017	U	NC
AAS-13/FD-08	cis-1,2-Dichloroethene	0.14		0.15		7
AAS-13/FD-08	trans-1,2-Dichloroethene	0.031	U	0.031	U	NC
AAS-13/FD-08	Trichloroethene	0.42		0.41		2
AAS-13/FD-08	Vinyl chloride	0.033	U	0.048	J	NC

Notes:

1. Concentrations are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
2. RPD - relative percent difference (between duplicate results).
3. U - constituent not detected at the reporting limit.
4. J - estimated value.
5. NC - not calculated (results are below laboratory reporting limit).

Prepared By: JAR 7/08/14

Checked By: CSR 7/09/14



APPENDIX H

RISK ASSESSMENT CALCULATION TABLES

Addresses Redacted

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

TABLE H.1
Summary of Laboratory Analytical Results

INDOOR AIR SAMPLES

Address	Sample ID	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
(b)(6)	IAS-10	0.49	0.12	<0.011	<0.012
	IAS-08	0.21	0.060 J	<0.024	<0.026
	FD-06 (IAS-08)	0.21	0.058 J	<0.024	<0.026
	IAS-12	0.51	0.17	0.016 J	<0.011
Target Indoor VISL / Residential Air RSL		0.21	NE	6.3	0.17

Notes:

1. Concentrations in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
2. TCE = trichloroethene; cis-1,2-DCE = cis-1,2-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene; VC = vinyl chloride
3. VISL - Vapor Intrusion Screening Level calculated using the USEPA Office of Solid Waste and Emergency Response VISL Calculator (Version 3.2.1, February 2014) for residential land use assuming 10^{-6} target risk and 0.1 target hazard quotient.
4. RSL - Regional Screening Level for Residential Air, May 2014.
5. NE - a screening level has not been established for constituent.
6. Bold value indicates concentration greater than Target Residential Indoor VISL.
7. '<' - Constituent not detected at or above indicated laboratory reporting limit.

Prepared By: SEK 7/02/14

Checked By: MEW 7/02/14

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

TABLE H.2
Calculations of Risk to Indoor Air Concentrations
Adult Resident (Current and Future)
Inhalation of Indoor Air

(b)(6)

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽⁴⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁵⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁶⁾ (Unitless)	Total Excess Cancer Risk ⁽⁷⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic ⁽³⁾ (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.49	Sampled	4.7E-01	5.1E-01	2.0E-01	2.0E-03	1.0E-06	3.1E-06	IRIS	0.2	5.1E-07	6.2E-07	1E-06

Notes:

m³ = cubic meters

mg = milligram

RfC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in the indoor air (IAS-10).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Mutagenic risk for TCE includes age-adjusted risk for ages 0 to 30 years.

⁽⁴⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁵⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁶⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁷⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)+(ED10 x AF10)+(ED14 x AF14)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 30 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

ED10 = Exposure Duration 10 (mutagen) 10 (years)

ED14 = Exposure Duration ≥14 (mutagen) 14 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AF10 = Age-Dependent Adjustment Factor 3

AF14 = Age-Dependent Adjustment Factor 1

AT_{nc} = Averaging Time (Noncarcinogen, hours) 262,800

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

Address Removed
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 Section 552 (b)(6), Personal Privacy

TABLE H.3
 Calculations of Risk to Indoor Air Concentrations
 Child Resident (Current and Future)
 Inhalation of Indoor Air

(b)(6)

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽³⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁴⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁵⁾ (Unitless)	Total Excess Cancer Risk ⁽⁶⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.49	Sampled	4.7E-01	2.1E-01	4.0E-02	2.0E-03	1.0E-06	3.1E-06	IRIS	0.2	2.1E-07	1.2E-07	3E-07

Notes:

m³ = cubic meters

mg = milligram

RfC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in the indoor air (IAS-10).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁴⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁵⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁶⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/ AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 6 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AT_{nc} = Averaging Time (Noncarcinogen, hours) 52,560

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

Address Renamed

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Section 552 (b)(6), Personal Privacy

(b)(6)

TABLE H.4
Calculations of Risk to Indoor Air Concentrations –
Adult Resident (Current and Future)
Inhalation of Indoor Air

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽⁴⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁵⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁶⁾ (Unitless)	Total Excess Cancer Risk ⁽⁷⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic ⁽³⁾ (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.21	Sampled	2.0E-01	2.2E-01	8.6E-02	2.0E-03	1.0E-06	3.1E-06	IRIS	0.1	2.2E-07	2.7E-07	5E-07

Notes:

m³ = cubic meters

mg = milligram

RfC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in indoor air (IAS-08/FD-06).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Mutagenic risk for TCE includes age-adjusted risk for ages 0 to 30 years.

⁽⁴⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁵⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁶⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁷⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)+(ED10 x AF10)+(ED14 x AF14)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 30 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

ED10 = Exposure Duration 10 (mutagen) 10 (years)

ED14 = Exposure Duration ≥14 (mutagen) 14 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AF10 = Age-Dependent Adjustment Factor 3

AF14 = Age-Dependent Adjustment Factor 1

AT_{nc} = Averaging Time (Noncarcinogen, hours) 262,800

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

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Section 552 (b)(6), Personal Privacy

TABLE H.5
Calculations of Risk to Indoor Air Concentrations
Child Resident (Current and Future)
Inhalation of Indoor Air

(b)(6)

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽³⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁴⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁵⁾ (Unitless)	Total Excess Cancer Risk ⁽⁶⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.21	Sampled	2.0E-01	9.2E-02	1.7E-02	2.0E-03	1.0E-06	3.1E-06	IRIS	0.1	9.2E-08	5.4E-08	1E-07

Notes:

m³ = cubic meters

mg = milligram

RfC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in the indoor air (IAS-08/FD-06).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁴⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁵⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁶⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/ AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 6 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AT_{nc} = Averaging Time (Noncarcinogen, hours) 52,560

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

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Section 552 (b)(6), Personal Privacy**

TABLE H.6

Calculations of Risk to Indoor Air Concentrations --
Adult Resident (Current and Future)
Inhalation of Indoor Air

(b)(6)

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽⁴⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁵⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁶⁾ (Unitless)	Total Excess Cancer Risk ⁽⁷⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic ⁽³⁾ (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.51	Sampled	4.9E-01	5.3E-01	2.1E-01	2.0E-03	1.0E-06	3.1E-06	IRIS	0.2	5.3E-07	6.5E-07	1E-06

Notes:

m³ = cubic meters

mg = milligram

RIC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in the indoor air (IAS-12).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Mutagenic risk for TCE includes age-adjusted risk for ages 0 to 30 years.

⁽⁴⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁵⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁶⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁷⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/ AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)+(ED10 x AF10)+(ED14 x AF14)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 30 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

ED10 = Exposure Duration 10 (mutagen) 10 (years)

ED14 = Exposure Duration ≥14 (mutagen) 14 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AF10 = Age-Dependent Adjustment Factor 3

AF14 = Age-Dependent Adjustment Factor 1

AT_{nc} = Averaging Time (Noncarcinogen, hours) 262,800

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

Address Removal

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

TABLE H.7

Calculations of Risk to Indoor Air Concentrations –
Child Resident (Current and Future)
Inhalation of Indoor Air

(b)(6)

Parameter	Concentration in Air (ug/m ³)	Exposure Value Type ⁽¹⁾	Exposure Concentration ⁽²⁾			Toxicity Values			Source	Hazard Quotient ⁽³⁾ (Unitless)	Kidney Excess Cancer Risk ⁽⁴⁾ (Unitless)	Liver Excess Cancer Risk ⁽⁵⁾ (Unitless)	Total Excess Cancer Risk ⁽⁶⁾ (Unitless)
			Noncarcinogen (ug/m ³)	Mutagenic (ug/m ³)	Carcinogen (ug/m ³)	Inhalation RfC (mg/m ³)	Inhalation Kidney Mutagenic Unit Risk (ug/m ³) ⁻¹	Inhalation Liver Unit Risk (ug/m ³) ⁻¹					
Trichloroethylene	0.51	Sampled	4.9E-01	2.2E-01	4.2E-02	2.0E-03	1.0E-06	3.1E-06	IRIS	0.2	2.2E-07	1.3E-07	4E-07

Notes:

m³ = cubic meters

mg = milligram

RfC = Reference Concentration

ug = micrograms

IRIS = Integrated Risk Information System (TCE data most recently revised September 28, 2011)

⁽¹⁾ Concentration detected in the indoor air (IAS-12).

⁽²⁾ Exposure Concentration = See Equations below

⁽³⁾ Hazard Quotient (Noncarcinogens) = Noncarcinogen Exposure Concentration/RfC x 1000 ug/mg

⁽⁴⁾ Kidney Excess Cancer Risk = Mutagenic Exposure Concentration x Inhalation Kidney Mutagenic Unit Risk

⁽⁵⁾ Liver Excess Cancer Risk = Carcinogenic Exposure Concentration x Inhalation Liver Unit Risk

⁽⁶⁾ Total Excess Cancer Risk = Kidney Excess Cancer Risk + Liver Excess Cancer Risk

Carcinogen Exposure Concentration = CA x ET x EF x ED/ AT_c where:

Mutagenic Exposure Concentration = CA x ET x EF x ((ED2 x AF2)+(ED4 x AF4)) / AT_c where:

Noncarcinogen Exposure Concentration = CA x ET x EF x ED/AT_{nc} where:

CA = Constituent Concentration in Air (estimated) See above (ug/m³)

ET = Exposure Time (hours per day) 24 (hours/day)

EF = Exposure Frequency (days per year) 350 (days/year)

ED = Exposure Duration (years) 6 (years)

ED2 = Exposure Duration 2 (mutagen) 2 (years)

ED4 = Exposure Duration 4 (mutagen) 4 (years)

AF2 = Age-Dependent Adjustment Factor 10

AF4 = Age-Dependent Adjustment Factor 3

AT_{nc} = Averaging Time (Noncarcinogen, hours) 52,560

AT_c = Averaging Time (Carcinogenic, hours) 613,200

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14

Addresses Removed

Information Redacted pursuant to 5 U.S.C.
Section 552 (b)(6), Personal Privacy

TABLE H.8

Summary of Risk to Indoor Air Concentrations
Adult and Child Residents (Current and Future)
Inhalation of Indoor Air

Location	Adult (a)		Child	
	Hazard Quotient	Excess Cancer Risk	Hazard Quotient	Excess Cancer Risk
(b)(6)	0.1	5E-07	0.1	1E-07
	0.2	1E-06	0.2	3E-07
	0.2	1E-06	0.2	4E-07

Note:

(a) Adult and child excess cancer risk includes mutagenic exposures for multiple ages (TCE).

Prepared By: SEK 7/02/14

Checked By: LMS 7/02/14